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NSTC GREAT LAKES, IL
5090.3a

COMPREHENSIVE ENVIRONMENTAL SURVEY VOLUME II OF II BUILDINGS 834, 835, 836,
837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 848 FORT SHERIDAN IL
9/23/2004
VERSAR, INC.

VOLUME II of II

**COMPREHENSIVE ENVIRONMENTAL SURVEY
FORT SHERIDAN - 14 RESIDENTIAL BUILDINGS
BUILDINGS 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, and 848
FORT SHERIDAN, ILLINOIS
U.S. NAVY PROJECT NUMBER:N68950-00-A-5563 BPA CALL # 0019**

Prepared for:

**Department of the Navy
Naval Station Great Lakes
Naval Facilities Engineering Command, Midwest
201 Decatur Avenue, Building 1-A
Great Lakes, Illinois 60088**

Prepared by:

**Versar, Inc.
100 W. 22nd Street, Suite 151
Lombard, Illinois 60148
(630) 268-8555**


Versar Project Number: 111155.0001.001

September 23, 2004

Report Written by:


**Shaun Terranova
Environmental Specialist**

Approved for Release by:


**Jerry Wilson
Professional Engineer**

APPENDIX F

ASBESTOS SAMPLE LOCATION FLOOR PLANS

serve Center

LAKE MICHIGAN

NAVY
249
NCO FA

NCO FAMILY HOUSING

SANITARY
LANDFILL
CLOSED &
FILLED

FAMILY HOUSING

CHATFIELD COURT

DAVIS COURT

SHENCK RAVINE

GORDON JOHNSTON DRIVE
BUS STOP

WAINWRIGHT COURT

BUS STOP

BUS STOP

BUS STOP

PATTON ROAD

F STREET

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T-663

T-660

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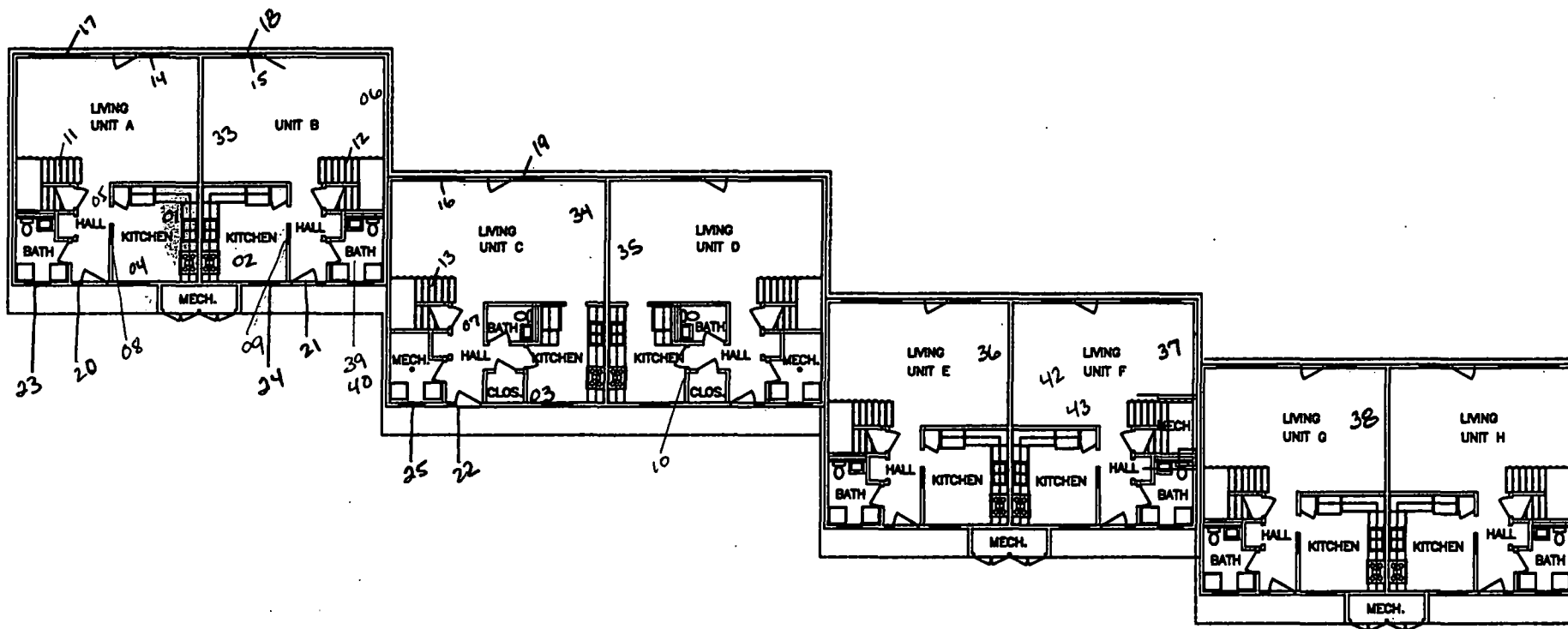
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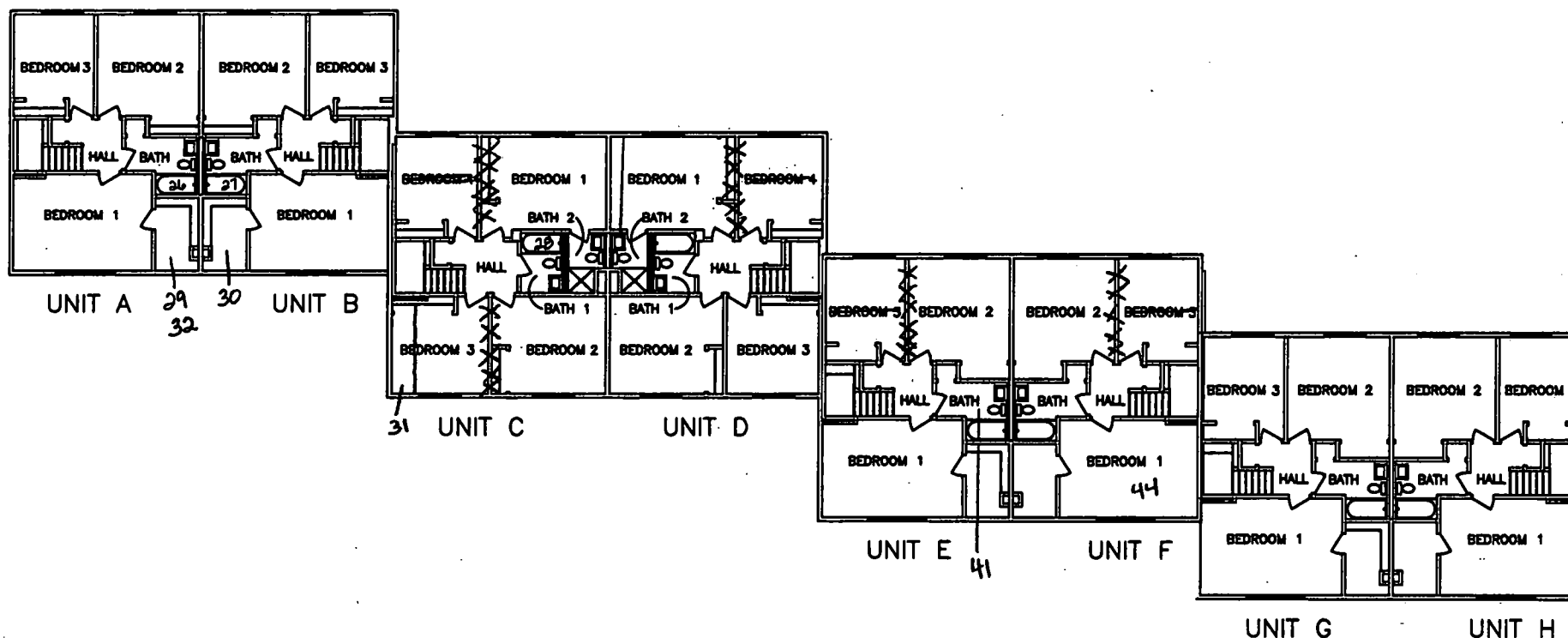
836



FIRST FLOOR PLAN 834



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN 132 GORDON JOHNSTON DRIVE (BUILDING 834), UNITS A-H		
DRAWN: WM	DATE: 9/16/04	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST
APPROVED: ST	SCALE: N.T.S.	
Versar, Inc. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		PROJECT NO. 111155.0001.001 DRAWING NO. 834



SECOND FLOOR PLAN 834



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN
132 GORDON JOHNSTON DRIVE (BUILDING 834), UNITS A-H

DRAWN: WM

DATE: 9/16/04

APPROVED: ST

SCALE: N.T.S.

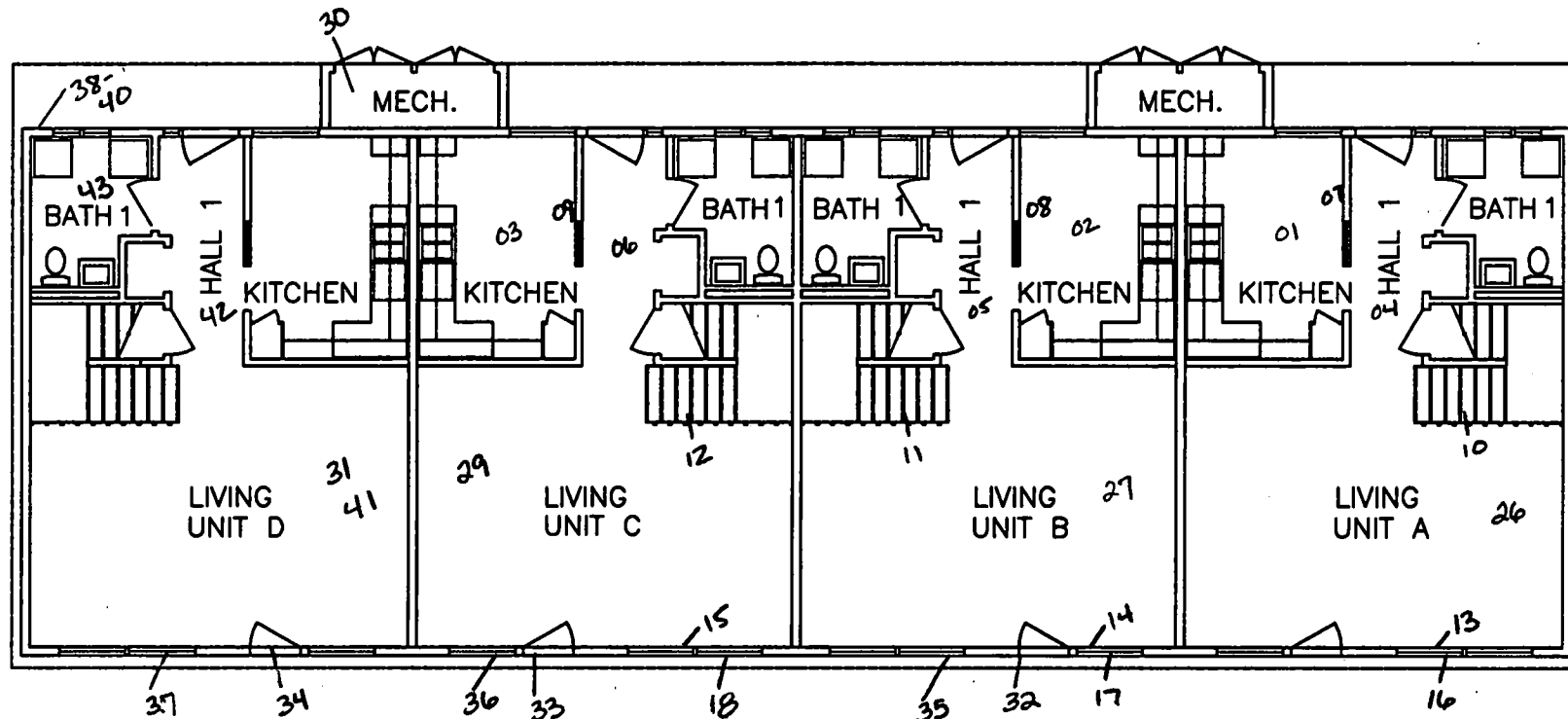
FOR: DEPARTMENT OF THE NAVY
NAVAL FACILITIES
ENGINEERING COMMAND,
MIDWEST

Versar INC.

100 W. 22nd STREET, SUITE 151
LOMBARD, IL 60148

PROJECT NO. 111155.0001.001

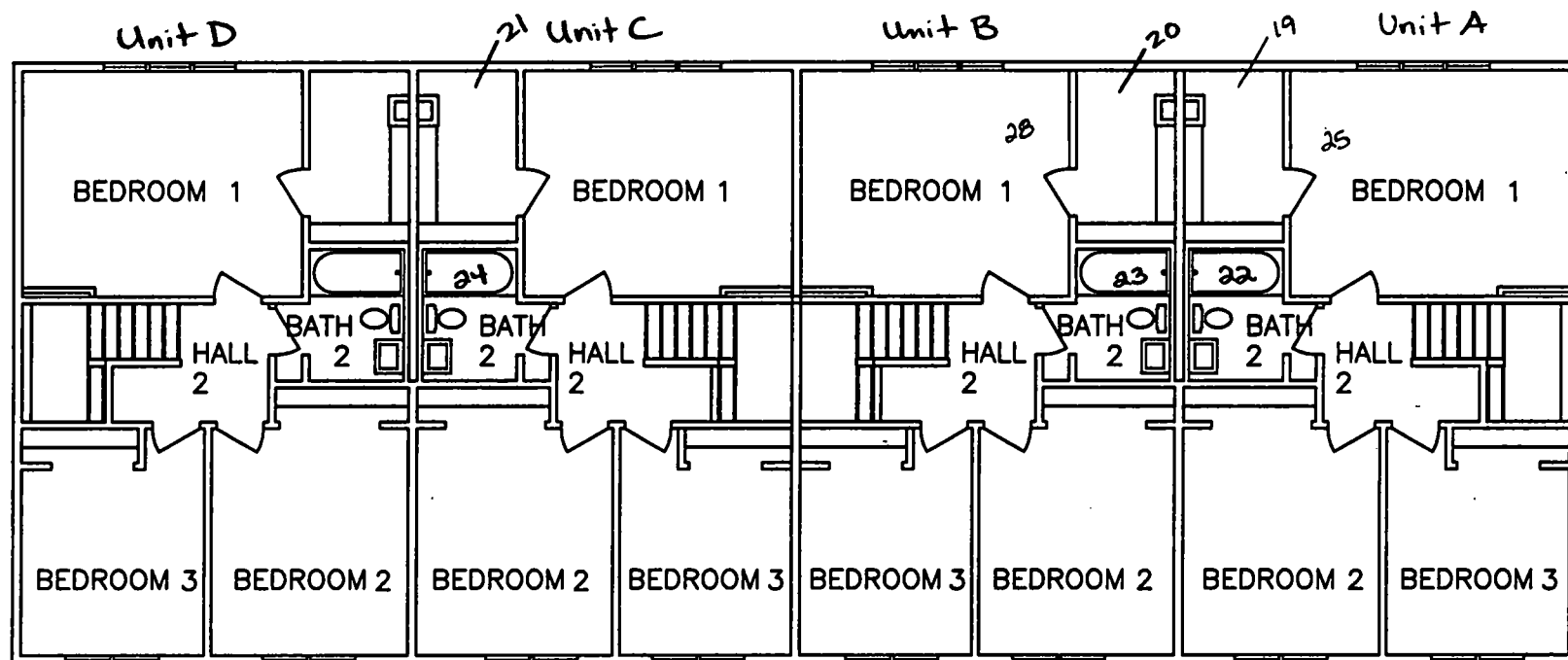
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FIRST FLOOR PLAN BUILDING 835



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN 143 GORDON JOHNSTON DRIVE (BUILDING 835), UNITS A-D		
DRAWN: WM	DATE: 9/16/04	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST
APPROVED: ST	SCALE: N.T.S.	
Versar inc. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		PROJECT NO. 111155.0001.001 DRAWING NO. 835

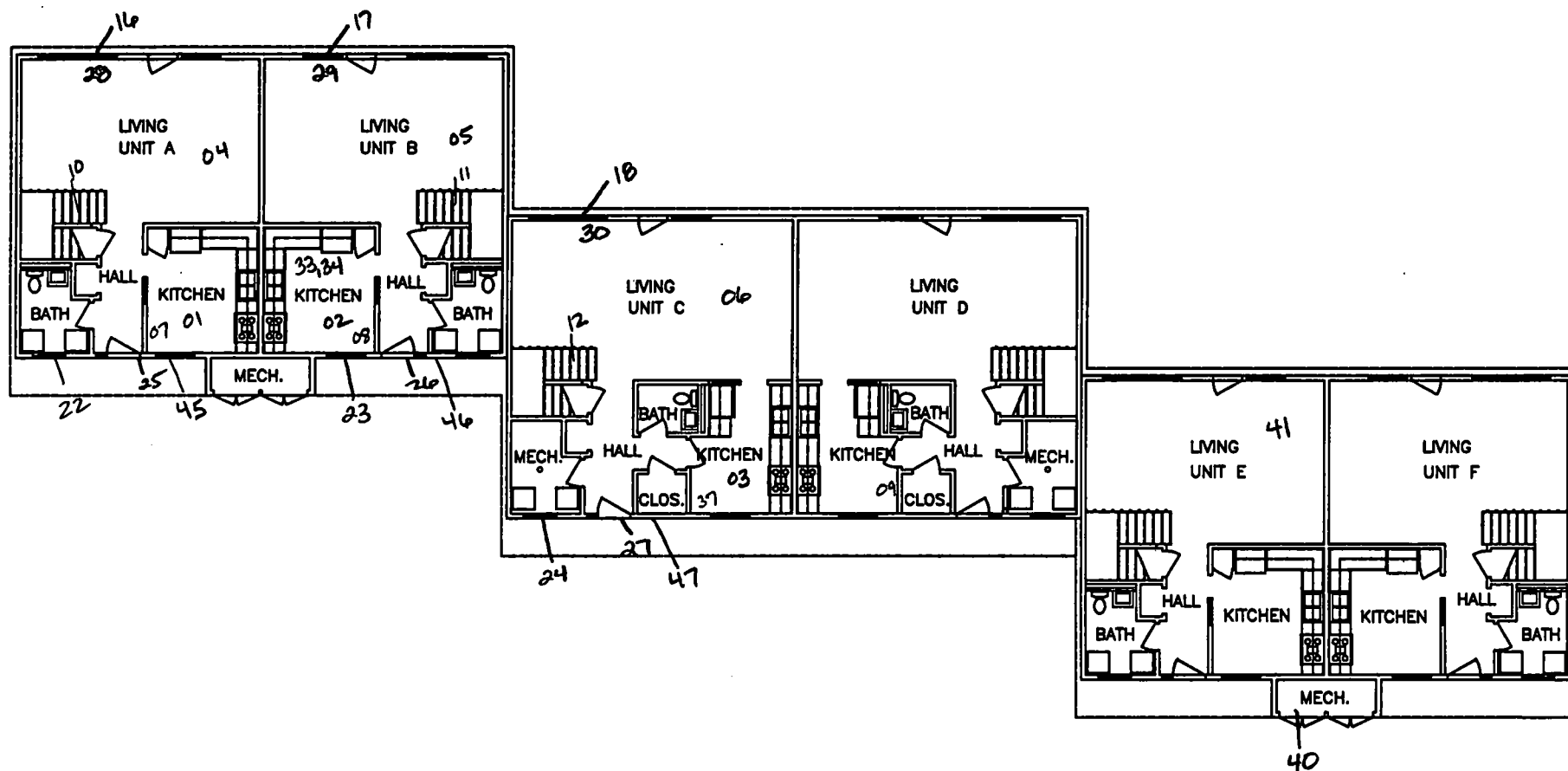


SECOND FLOOR PLAN BUILDING 835



NORTH

TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN 143 GORDON JOHNSTON DRIVE (BUILDING 835), UNITS A-D		
DRAWN: WM APPROVED: ST	DATE: 9/16/04 SCALE: N.T.S.	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST
Versar Inc. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		
PROJECT NO. 111155.0001.001 DRAWING NO. 835		



FIRST FLOOR PLAN 836



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN
155 GORDON JOHNSTON DRIVE (BUILDING 836), UNITS A-F

DRAWN: WM

DATE: 9/16/04

APPROVED: ST

SCALE: N.T.S.

FOR:

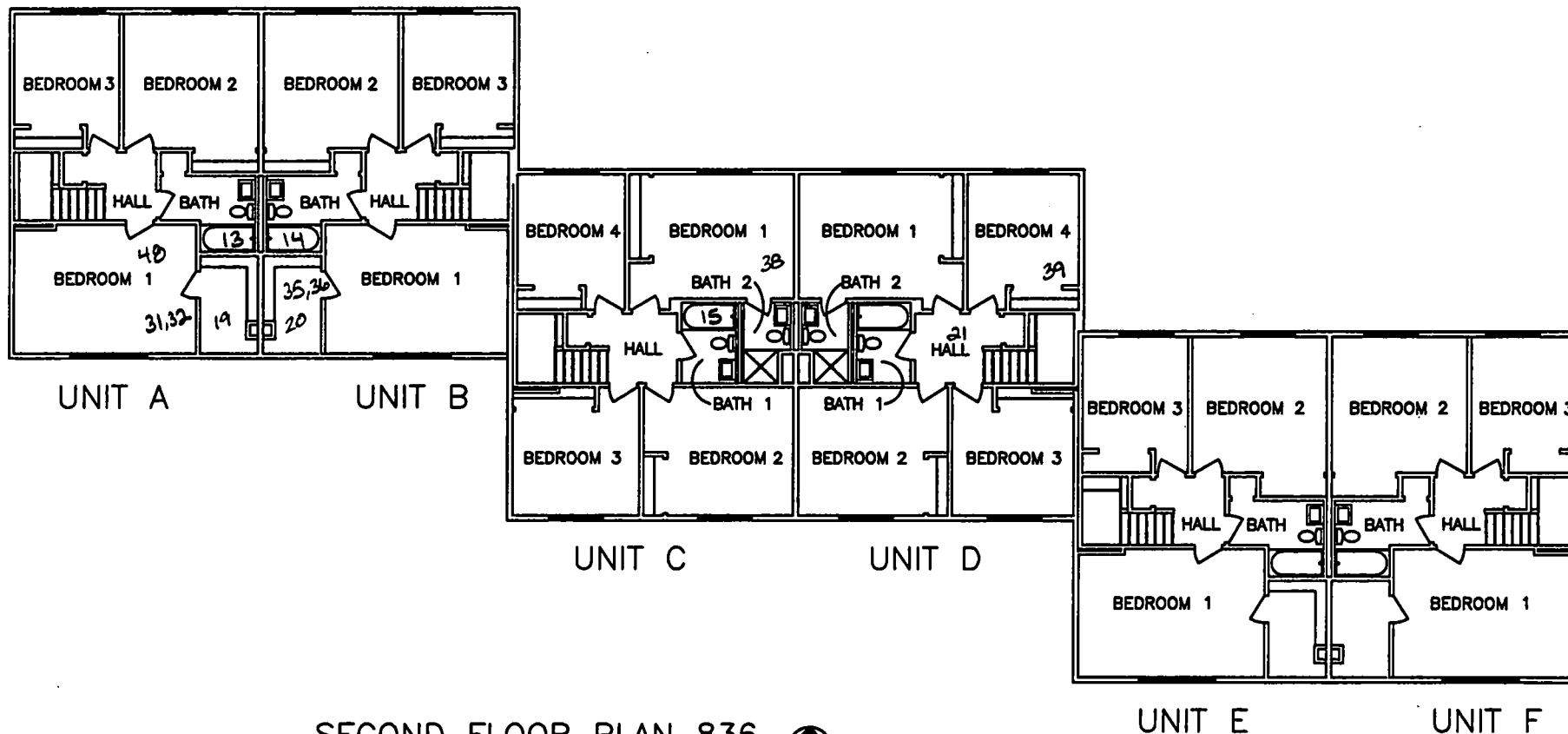
DEPARTMENT OF THE NAVY
NAVAL FACILITIES
ENGINEERING COMMAND,
MIDWEST

Versar inc.

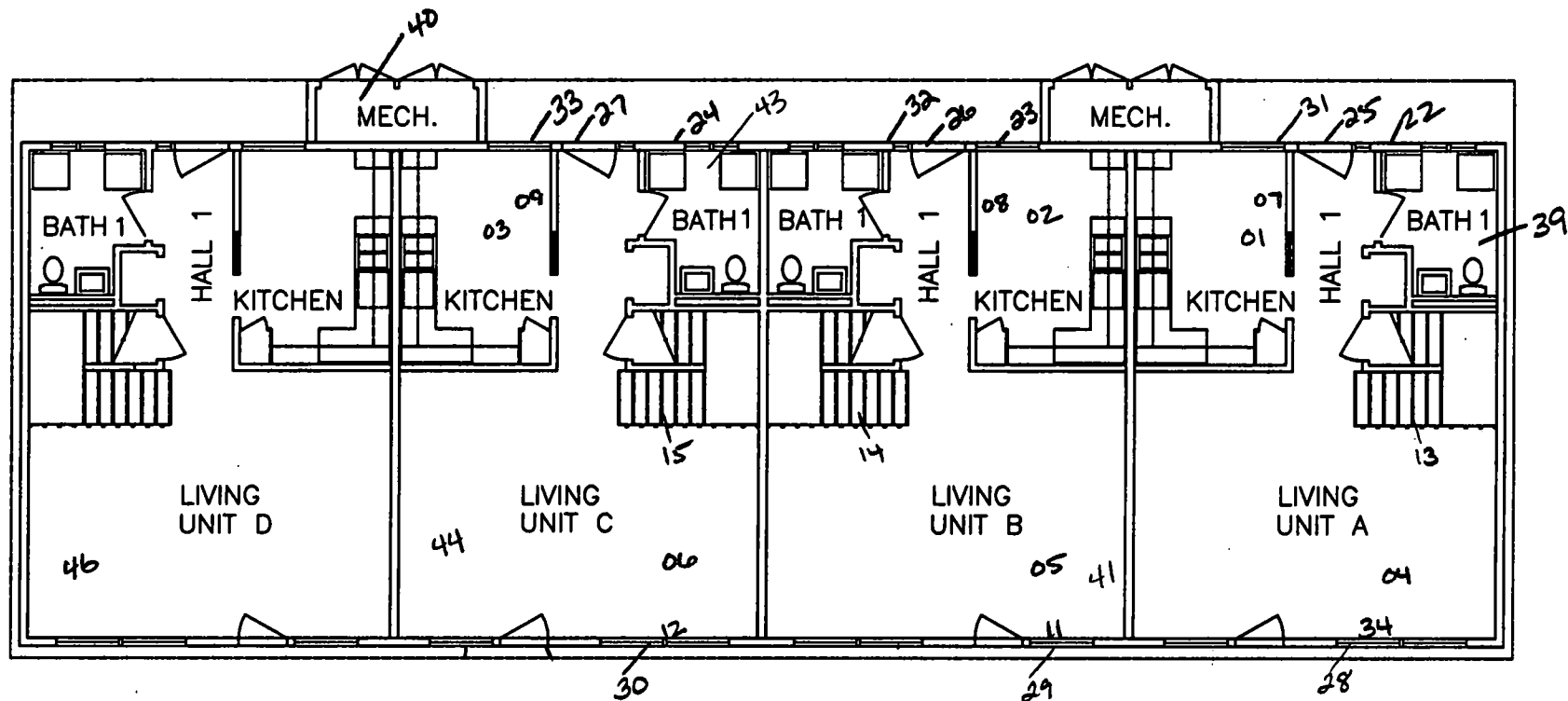
100 W. 22nd STREET, SUITE 151
LOMBARD, IL 60148

PROJECT NO. 111155.0001.001

DRAWING NO. 836



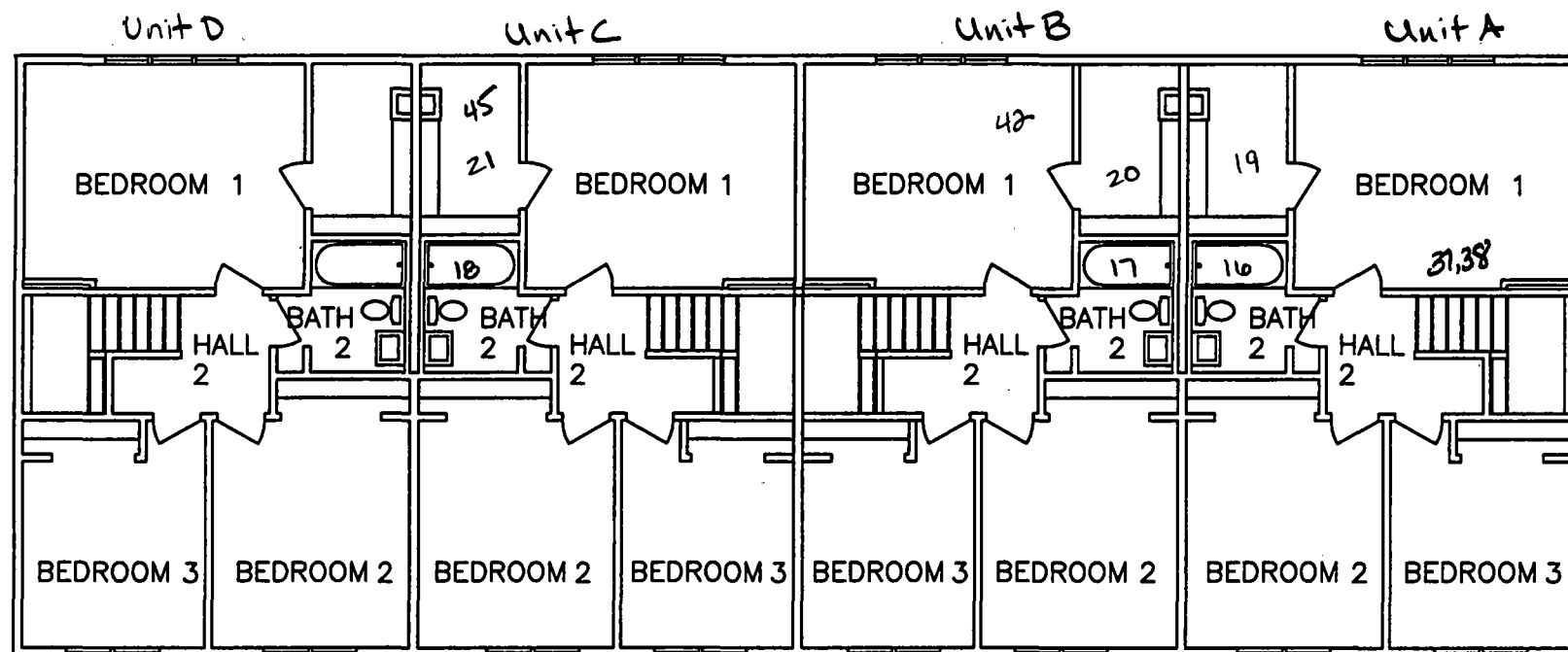
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DRAWN: WM APPROVED: ST	DATE: 9/16/04 SCALE: N.T.S.	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST
Versar INC. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		
PROJECT NO. 111155.0001.001 DRAWING NO. 836		



FIRST FLOOR PLAN BUILDING 837



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN 157 GORDON JOHNSTON DRIVE (BUILDING 837), UNITS A-D		
DRAWN: WM	DATE: 9/16/04	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST
APPROVED: ST	SCALE: N.T.S.	
Versar INC. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		PROJECT NO. 111155.0001.001 DRAWING NO. 837



SECOND FLOOR PLAN BUILDING 837



NORTH

TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN
157 GORDON JOHNSTON DRIVE (BUILDING 837), UNITS A-D

DRAWN: WM

DATE: 9/16/04

FOR:

APPROVED: ST

SCALE: N.T.S.

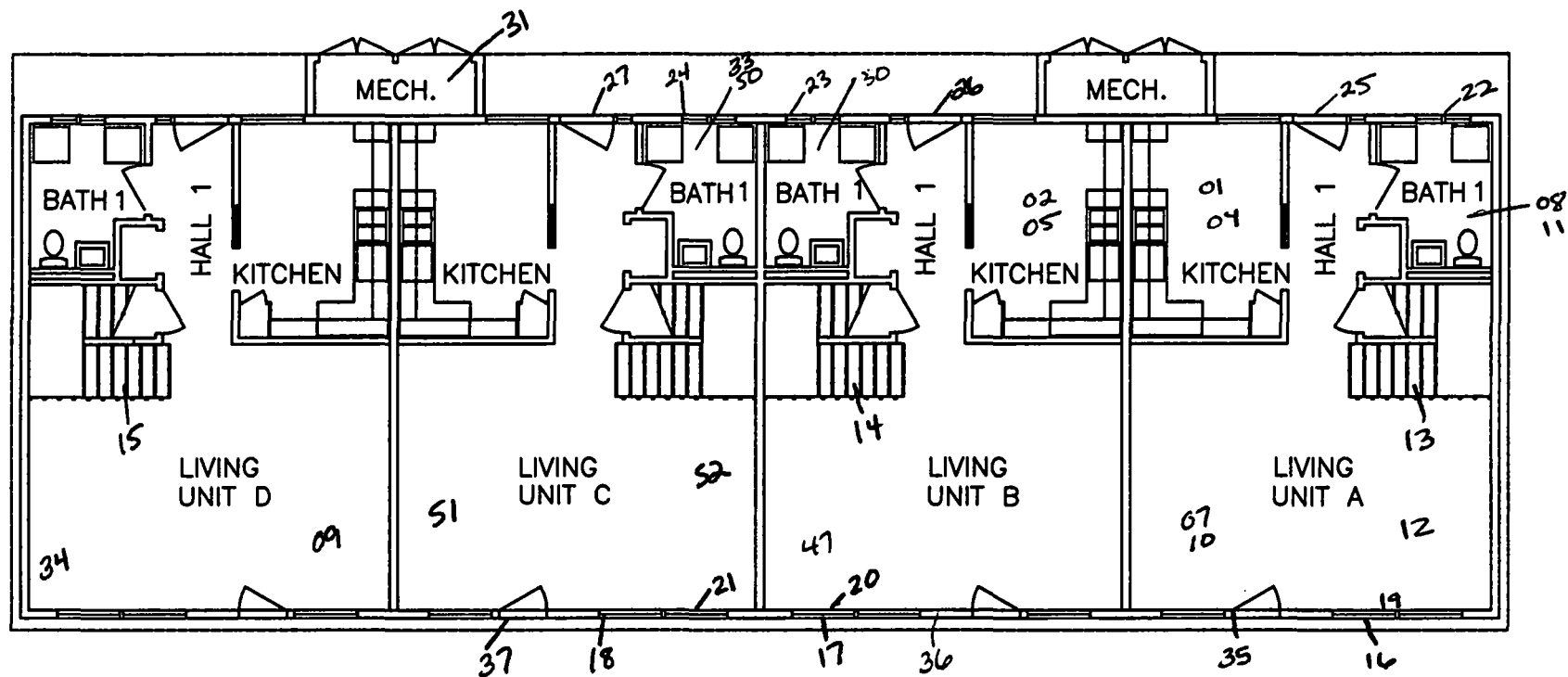
DEPARTMENT OF THE NAVY
NAVAL FACILITIES
ENGINEERING COMMAND,
MIDWEST

Versar INC.

100 W. 22nd STREET, SUITE 151
LOMBARD, IL 60148

PROJECT NO. 111155.0001.001

DRAWING NO. 837



FIRST FLOOR PLAN BUILDING 838



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN
167 GORDON JOHNSTON DRIVE (BUILDING 838), UNITS A-D

DRAWN: WM DATE: 9/16/04
APPROVED: ST SCALE: N.T.S.

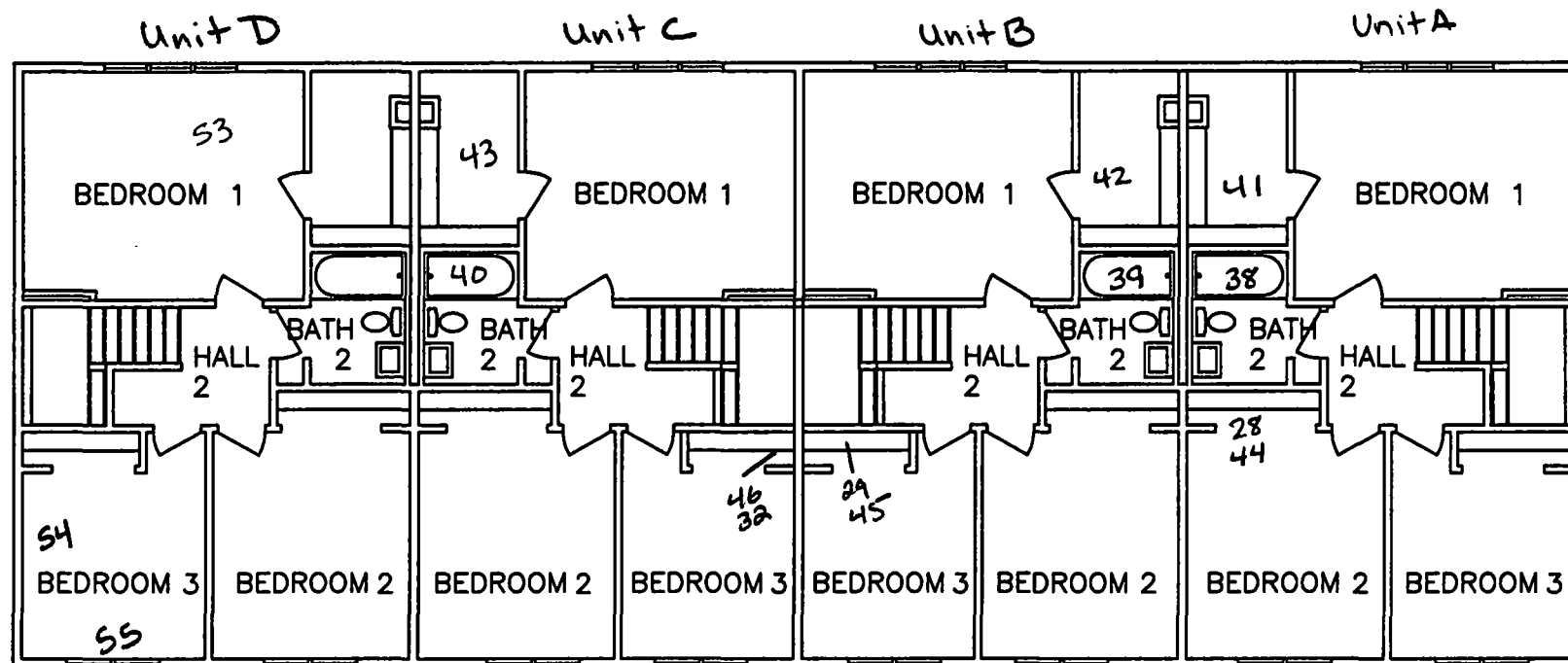
FOR: DEPARTMENT OF THE NAVY
NAVAL FACILITIES
ENGINEERING COMMAND,
MIDWEST

Versar INC.

100 W. 22nd STREET, SUITE 151
LOMBARD, IL 60148

PROJECT NO. 111155.0001.001

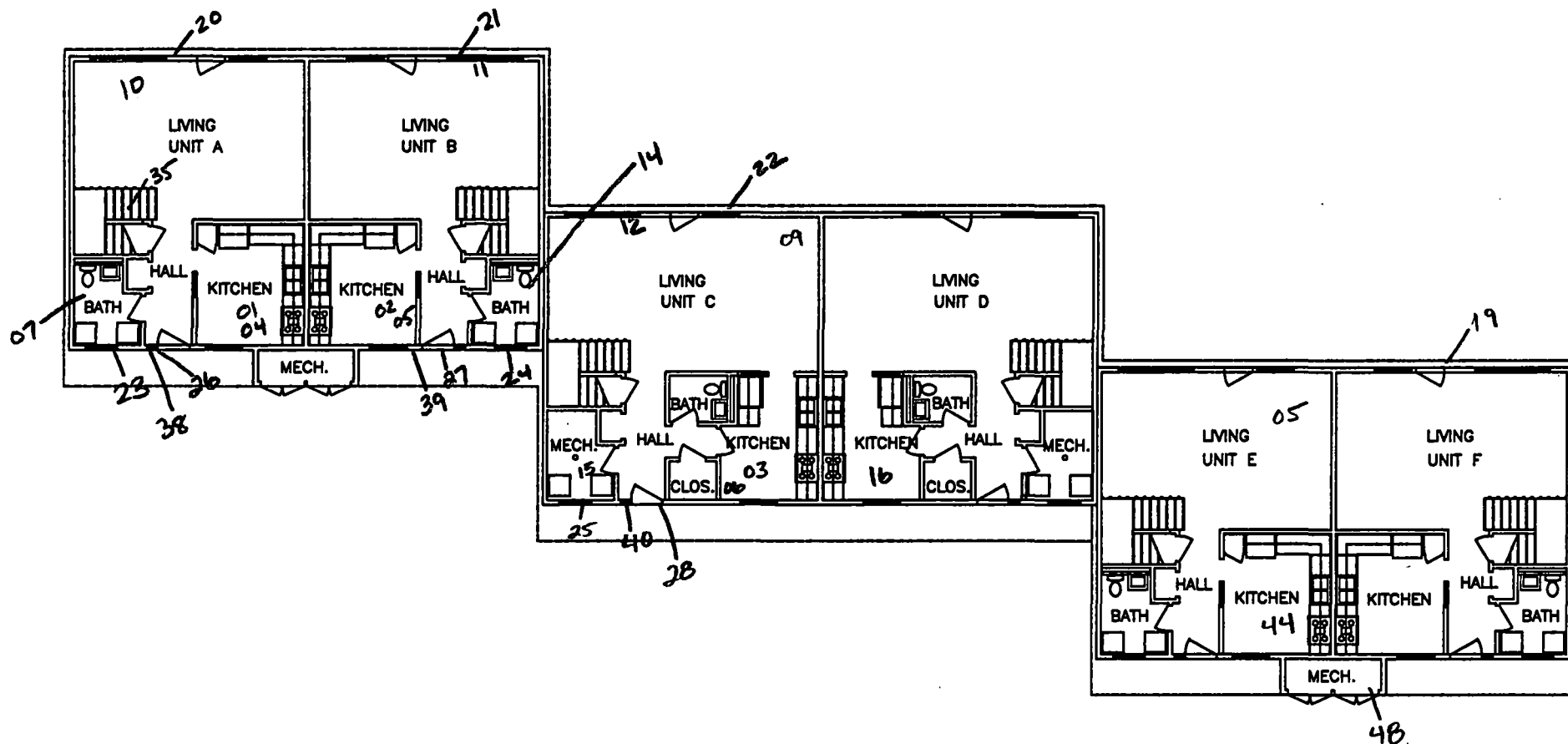
DRAWING NO. 838



SECOND FLOOR PLAN BUILDING 838



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN 167 GORDON JOHNSTON DRIVE (BUILDING 838), UNITS A-D		
DRAWN: WM APPROVED: ST	DATE: 9/16/04 SCALE: N.T.S.	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST
Versar INC. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		
PROJECT NO. 111155.0001.001 DRAWING NO. 838		



FIRST FLOOR PLAN 839



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN
183 GORDON JOHNSTON DRIVE (BUILDING 839), UNITS A-F

DRAWN: WM DATE: 9/16/04
APPROVED: ST SCALE: N.T.S.

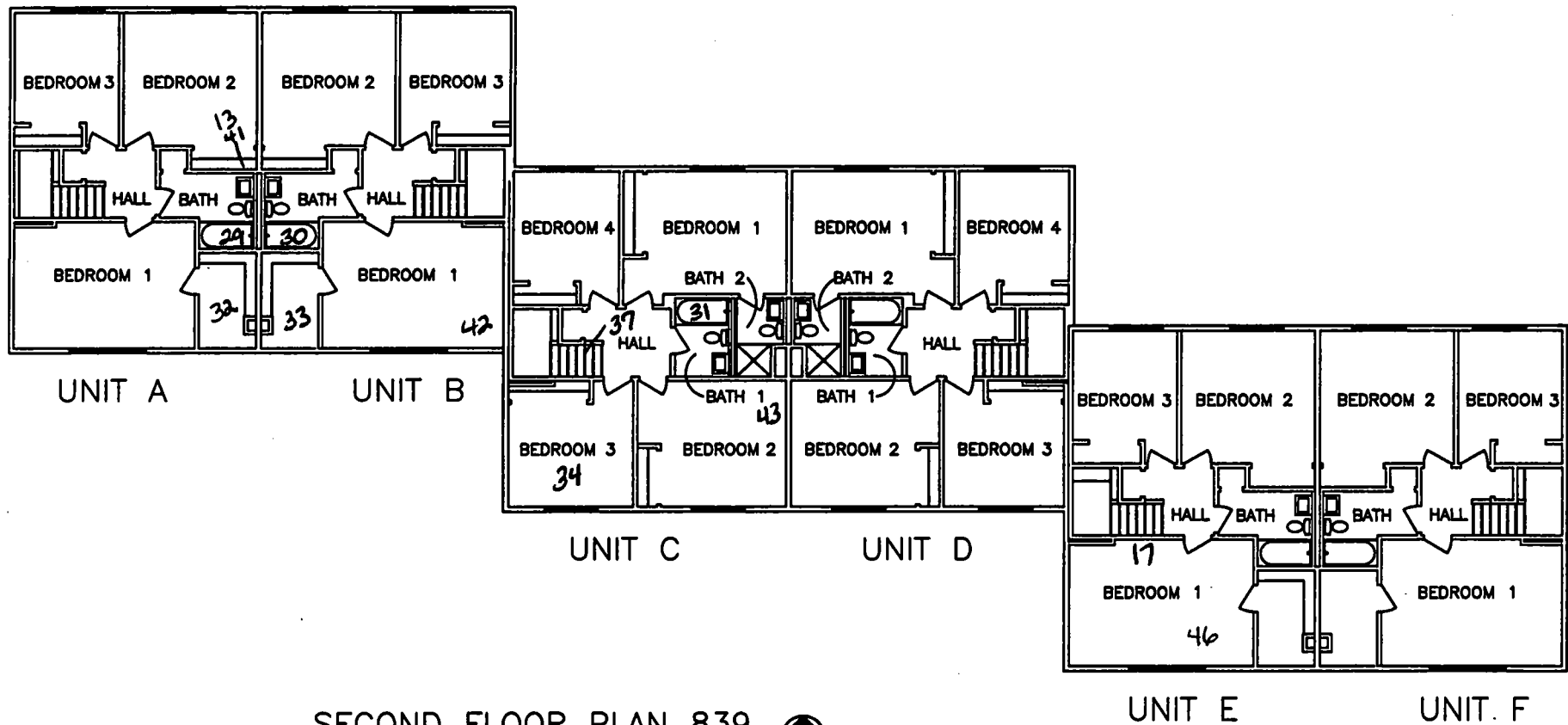
FOR: DEPARTMENT OF THE NAVY
NAVAL FACILITIES
ENGINEERING COMMAND,
MIDWEST

Versar INC.

100 W. 22nd STREET, SUITE 151
LOMBARD, IL 60148

PROJECT NO. 111155.0001.001

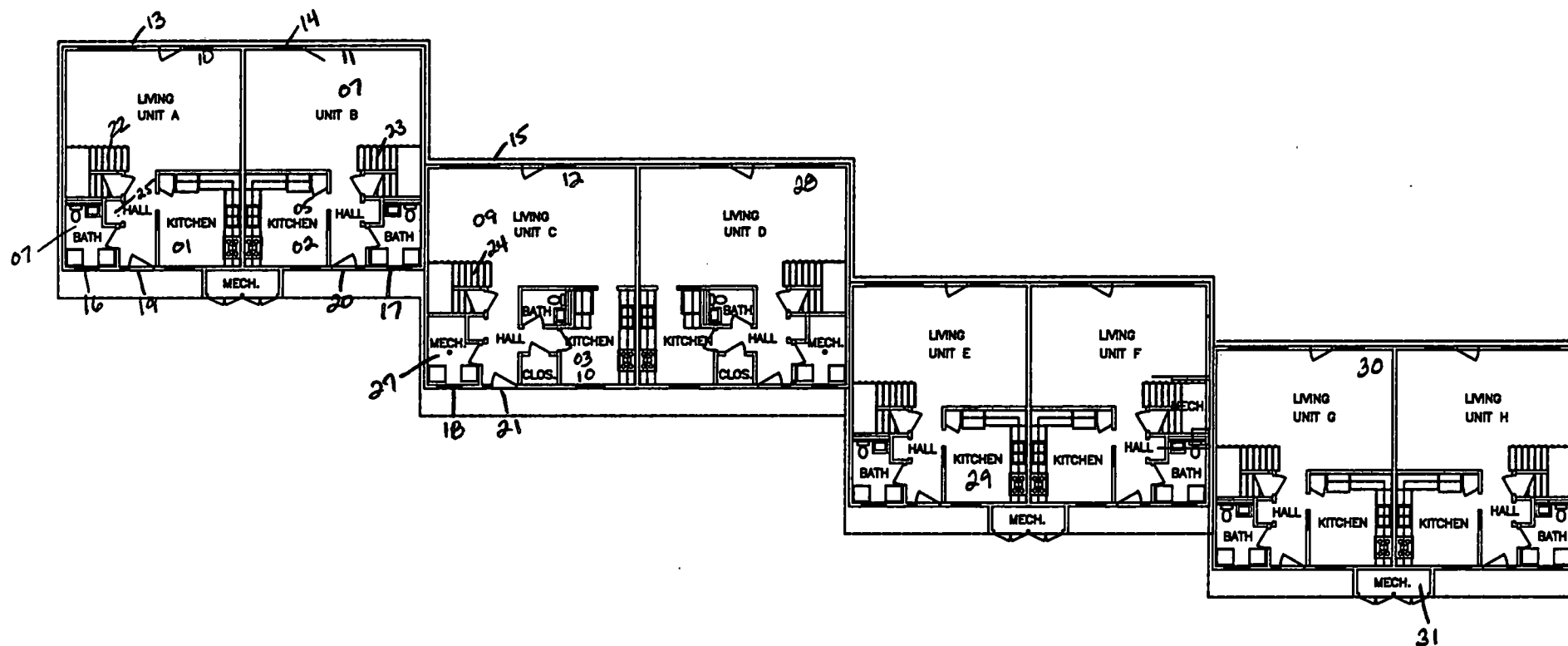
DRAWING NO. 839



SECOND FLOOR PLAN 839



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN 183 GORDON JOHNSTON DRIVE (BUILDING 839), UNITS A-F		
DRAWN: WM APPROVED: ST	DATE: 9/16/04 SCALE: N.T.S.	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST
Versar INC. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		PROJECT NO. 111155.0001.001 DRAWING NO. 839



FIRST FLOOR PLAN 840



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN
197 GORDON JOHNSTON DRIVE (BUILDING 840), UNITS A-H

DRAWN: WM

DATE: 9/16/04

FOR:

APPROVED: ST

SCALE: N.T.S.

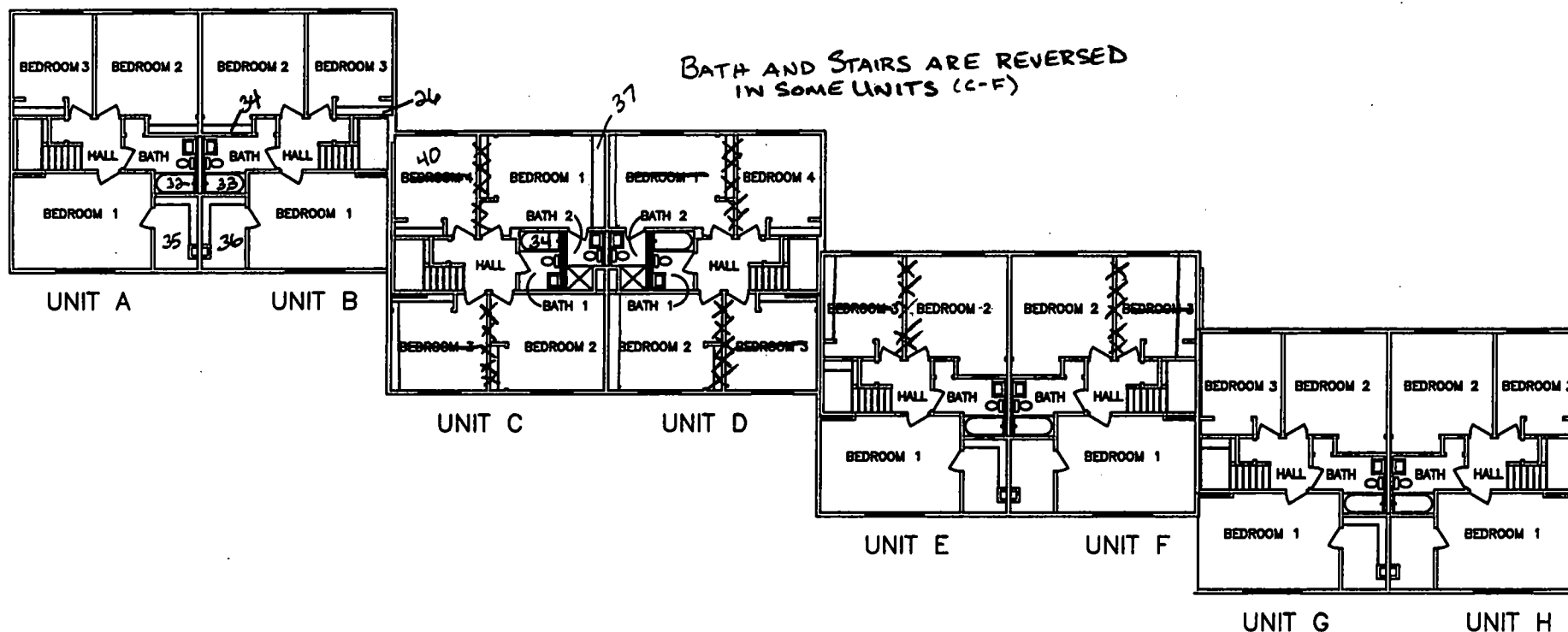
DEPARTMENT OF THE NAVY
NAVAL FACILITIES
ENGINEERING COMMAND,
MIDWEST

Versar inc.

100 W. 22nd STREET, SUITE 151
LOMBARD, IL 60148

PROJECT NO. 111155.0001.001

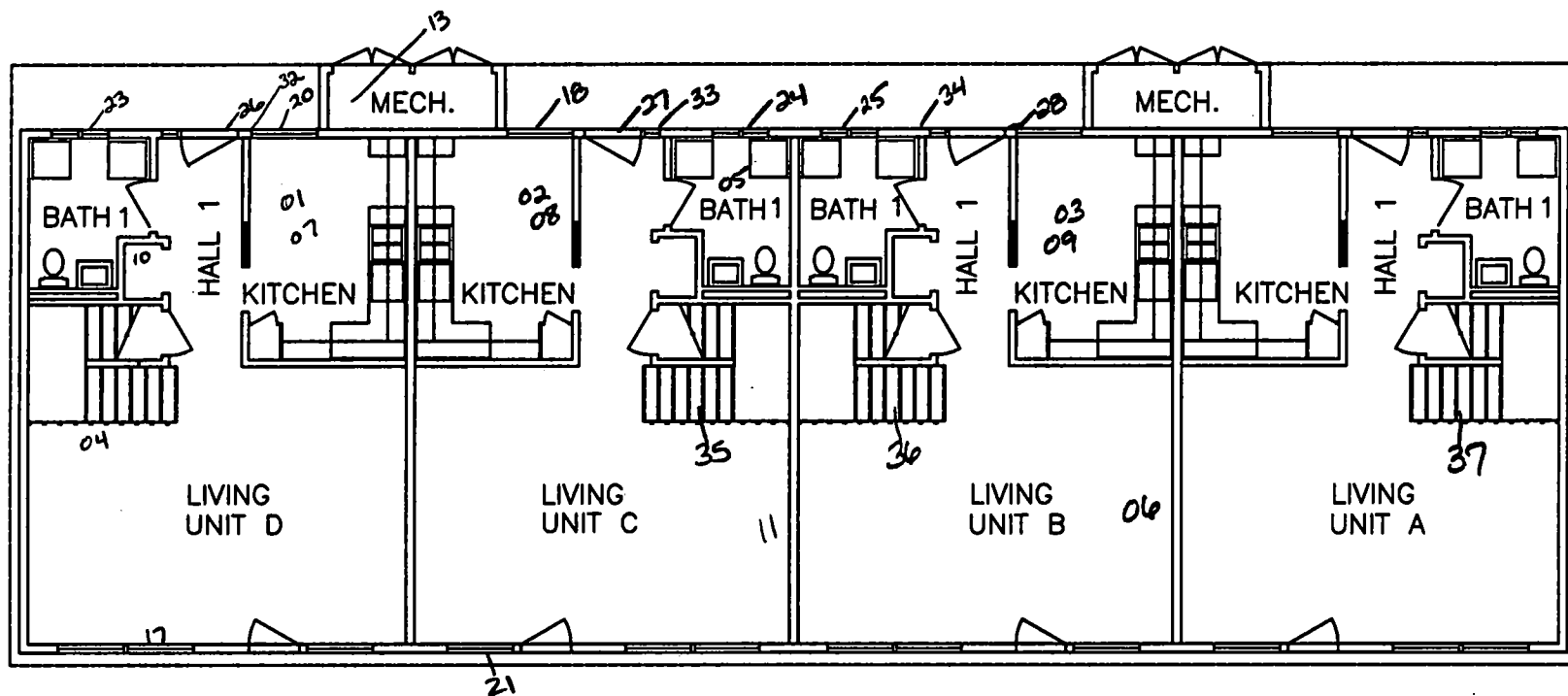
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SECOND FLOOR PLAN 840



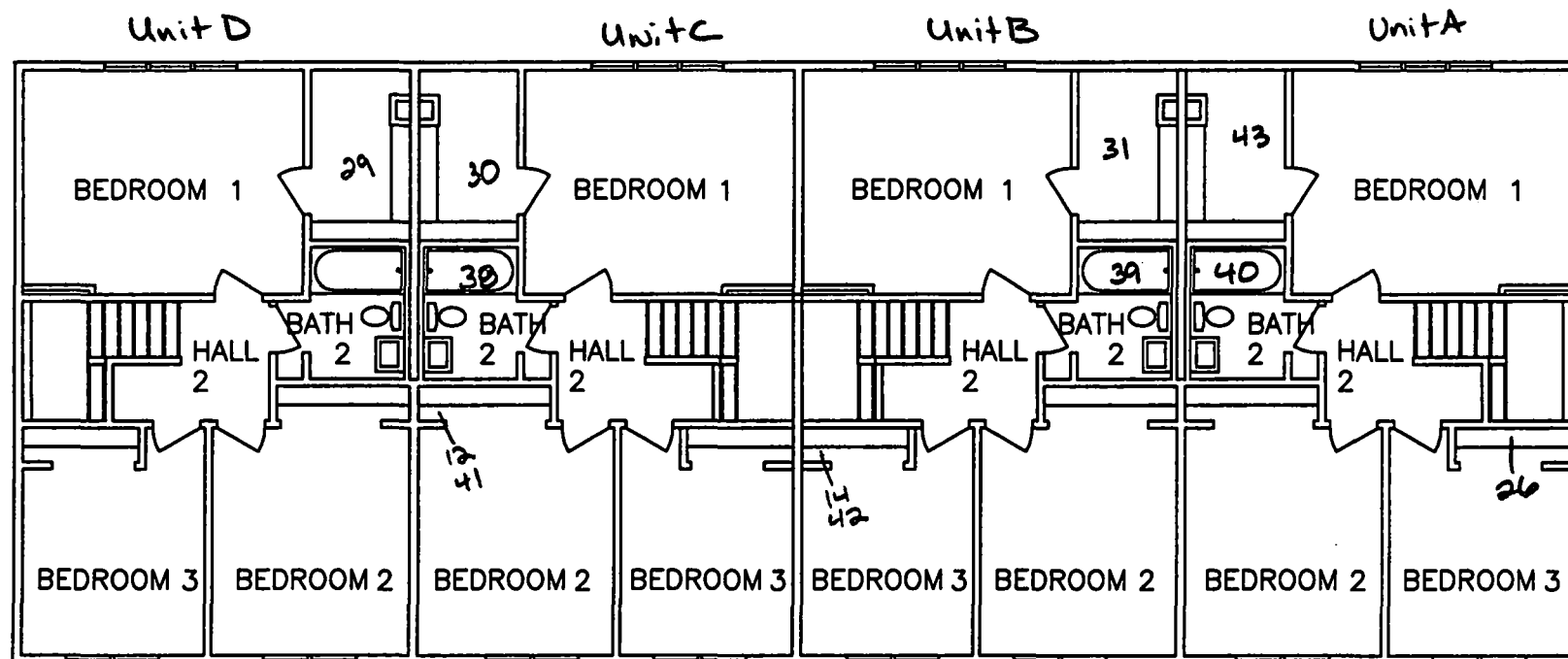
TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN 197 GORDON JOHNSTON DRIVE (BUILDING 840), UNITS A-H			
DRAWN: WM	DATE: 9/16/04	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST	
APPROVED: ST	SCALE: N.T.S.		
Versar INC. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		PROJECT NO. 111155.0001.001	DRAWING NO. 840



FIRST FLOOR PLAN BUILDING 841



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN 229 GORDON JOHNSTON DRIVE (BUILDING 841), UNITS A-D			
DRAWN: WM	DATE: 9/16/04	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST	
APPROVED: ST	SCALE: N.T.S.		
Versar inc. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		PROJECT NO.	111155.0001.001
		DRAWING NO.	841

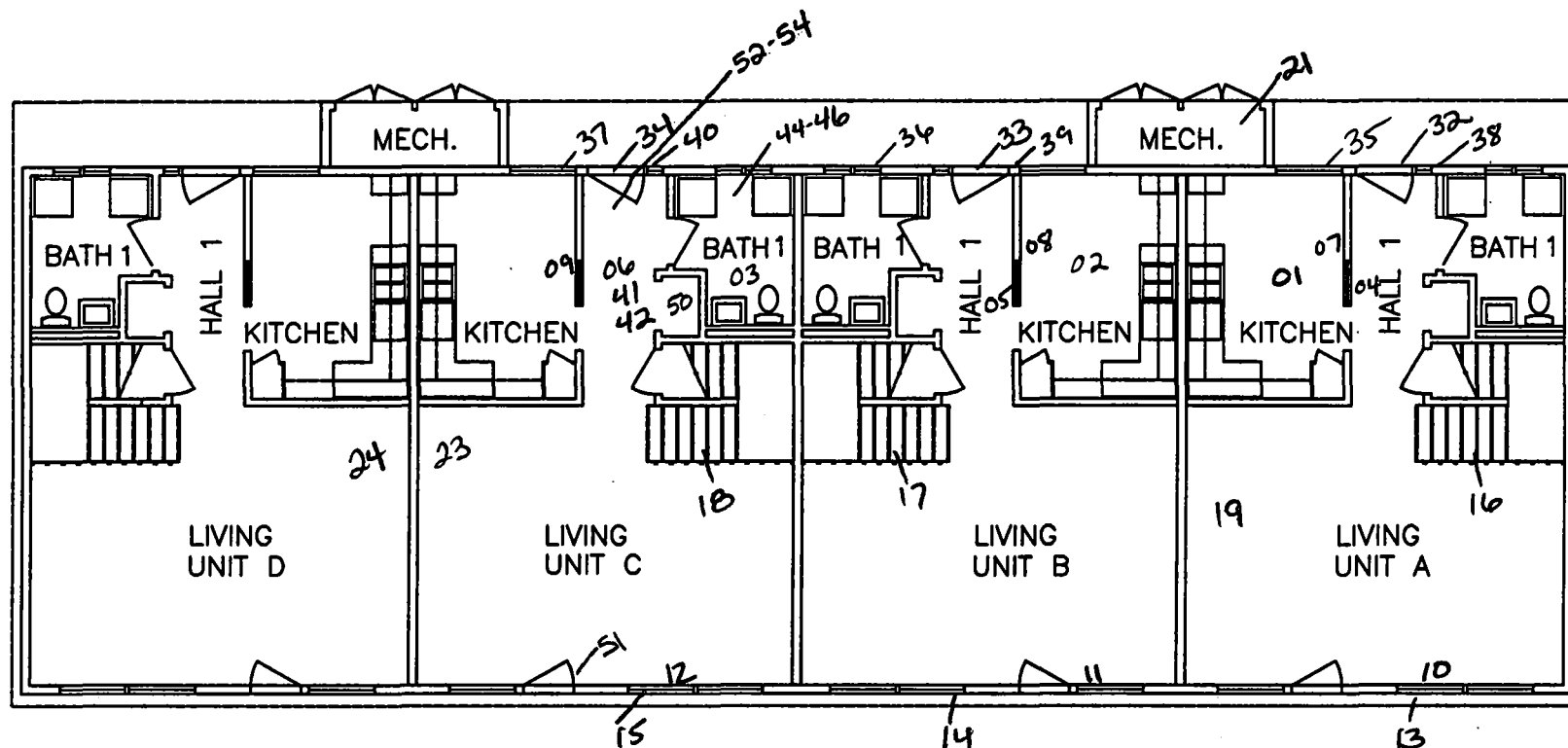


SECOND FLOOR PLAN BUILDING 841



NORTH

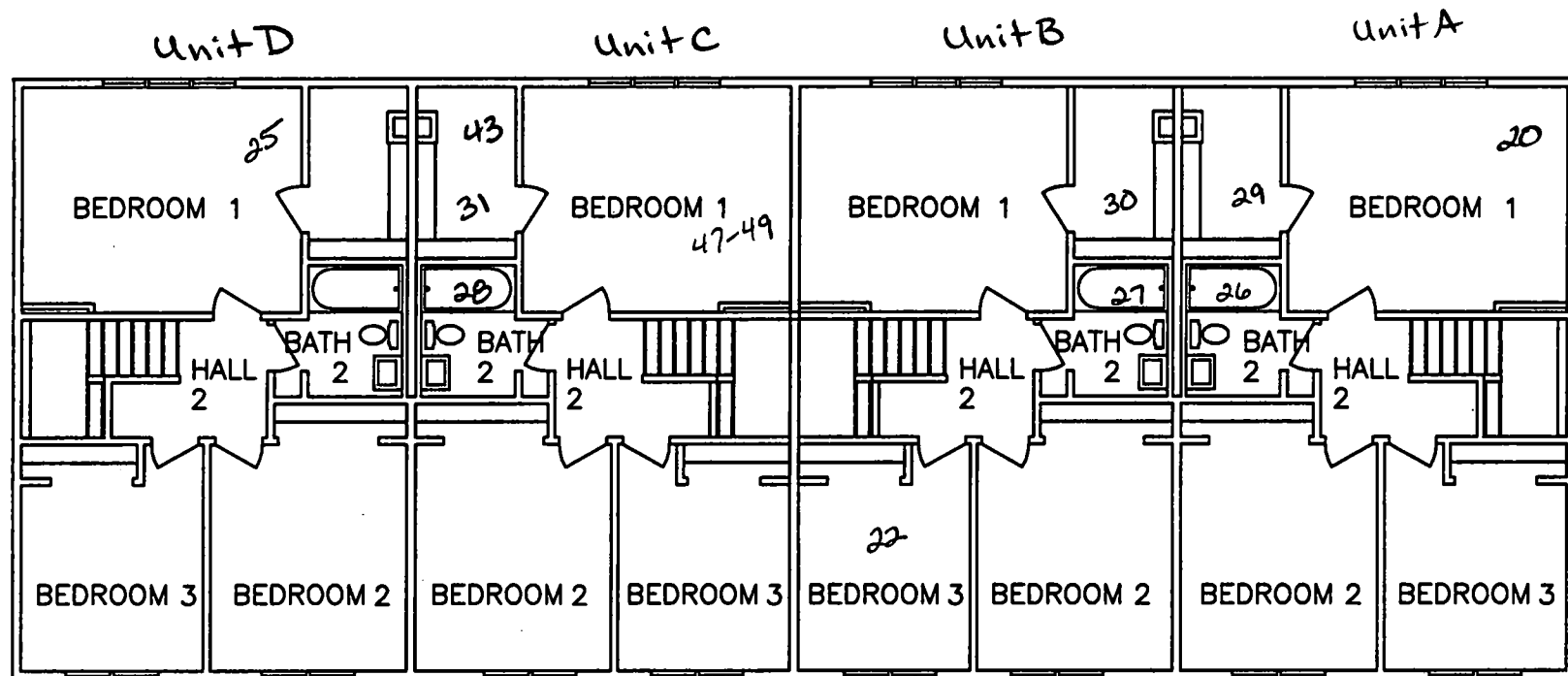
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DRAWN: WM		DATE: 9/16/04	
APPROVED: ST		SCALE: N.T.S.	
Versar INC. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST	
		PROJECT NO. 111155.0001.001 DRAWING NO. 841	



FIRST FLOOR PLAN BUILDING 842



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN 226 CHATFIELD COURT (BUILDING 842), UNITS A-D		
DRAWN: WM	DATE: 9/16/04	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST
APPROVED: ST	SCALE: N.T.S.	
Versar inc. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		PROJECT NO. 111155.0001.001 DRAWING NO. 842



SECOND FLOOR PLAN BUILDING 842

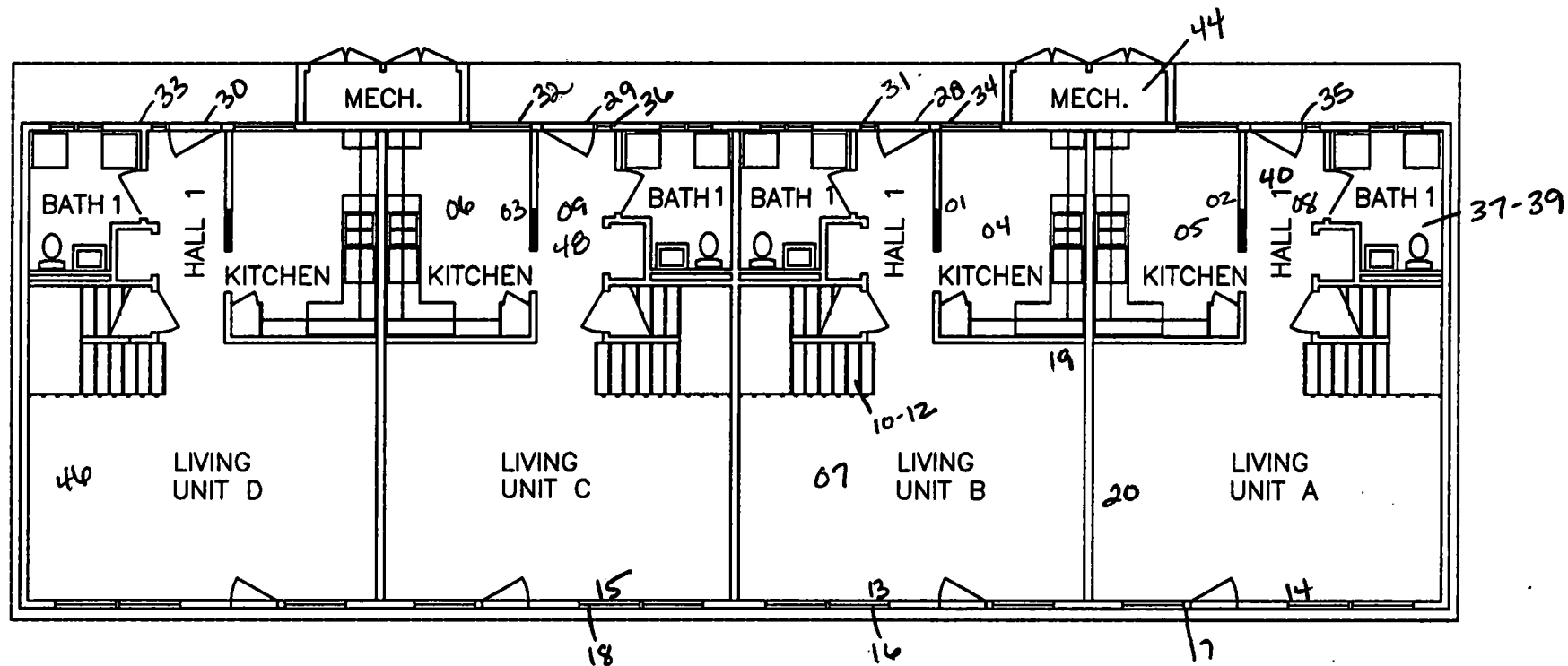


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APPROVED: ST		SCALE: N.T.S.	
FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST			
PROJECT NO. 111155.0001.001		DRAWING NO. 842	

Versar inc.

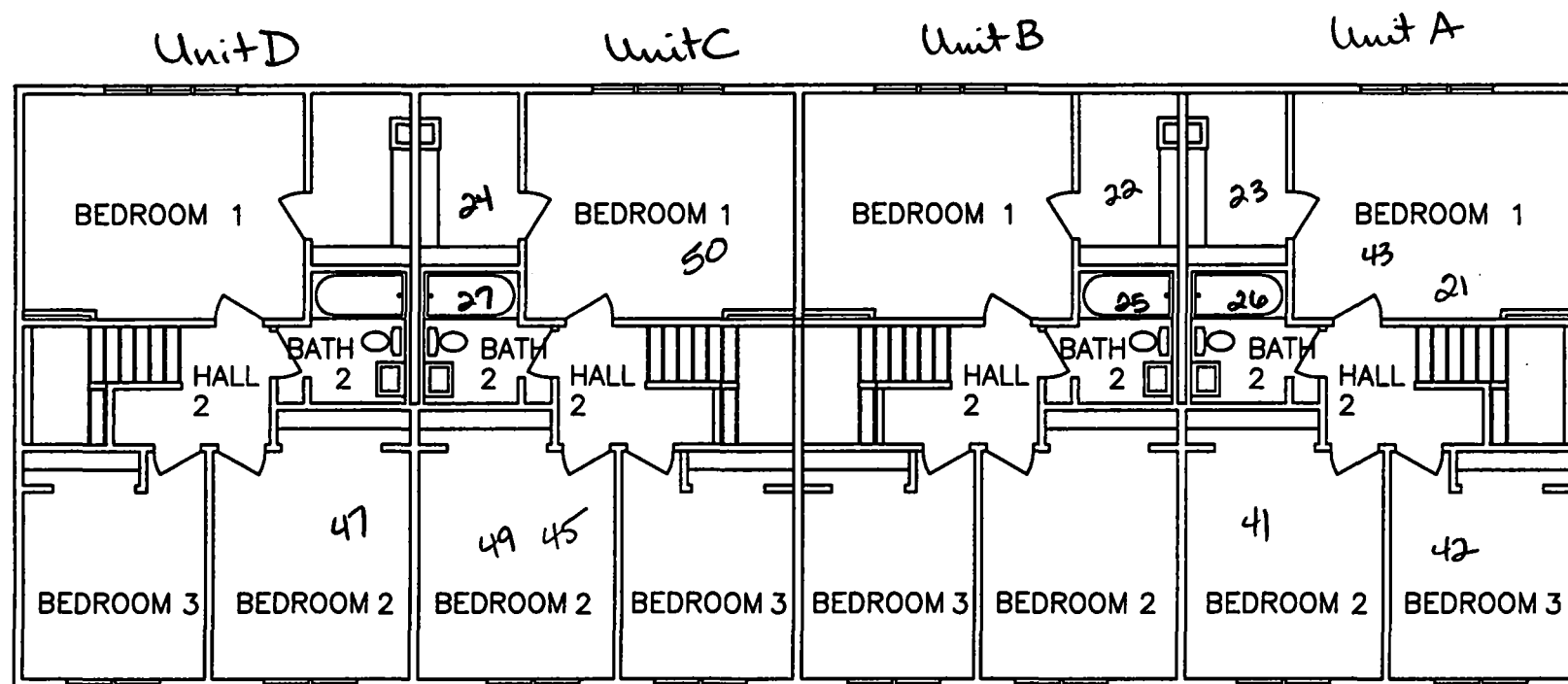
100 W. 22nd STREET, SUITE 151
 LOMBARD, IL 60148



FIRST FLOOR PLAN BUILDING 843



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN 216 CHATFIELD COURT (BUILDING 843), UNITS A-D		
DRAWN: WM APPROVED: ST	DATE: 9/16/04 SCALE: N.T.S.	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST
100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		
PROJECT NO. 111155.0001.001 DRAWING NO. 843		

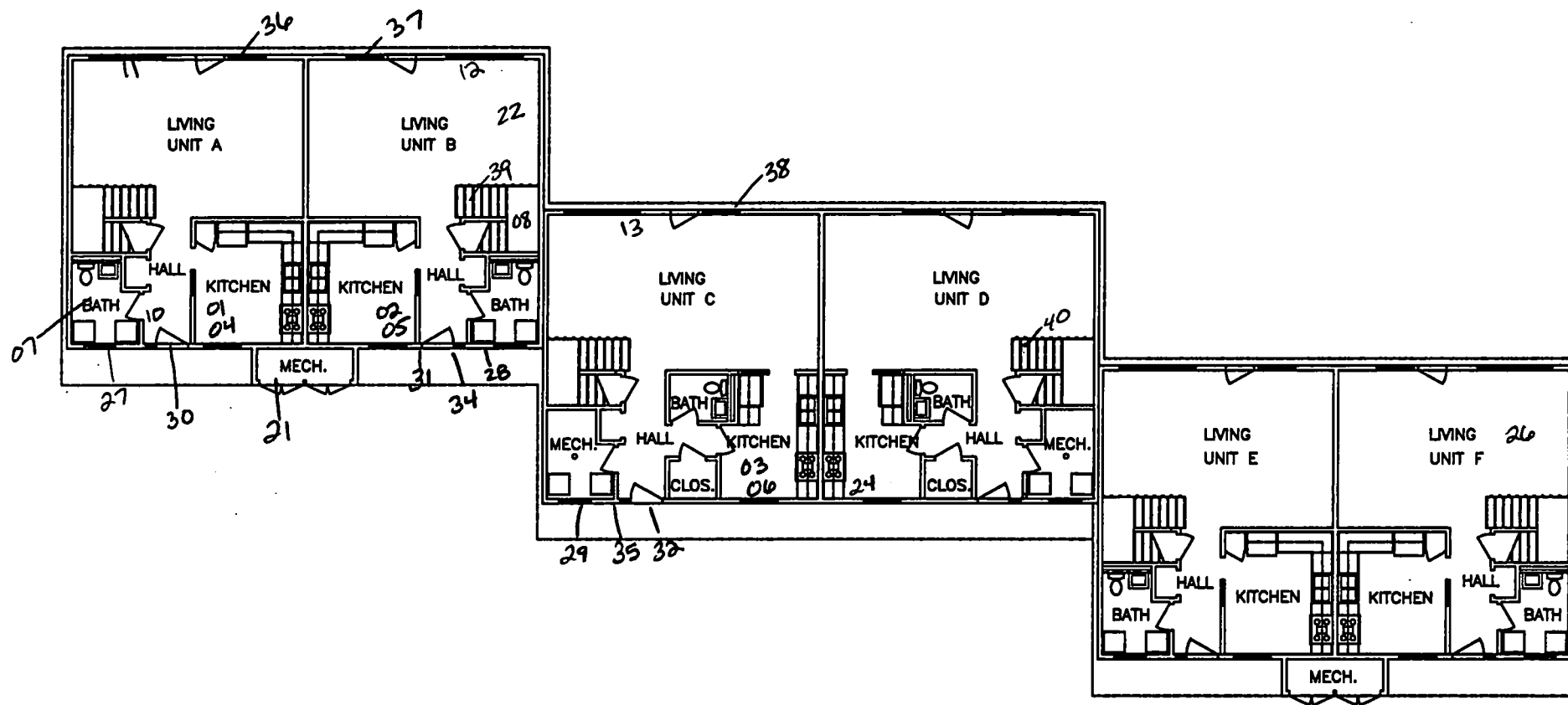


SECOND FLOOR PLAN BUILDING 843



NORTH

TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN 216 CHATFIELD COURT (BUILDING 843), UNITS A-D		
DRAWN: WM APPROVED: ST	DATE: 9/16/04 SCALE: N.T.S.	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST PROJECT NO. 111155.0001.001 DRAWING NO. 843
Versar inc. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		



FIRST FLOOR PLAN 844



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN
204 CHATFIELD COURT (BUILDING 844), UNITS A-F

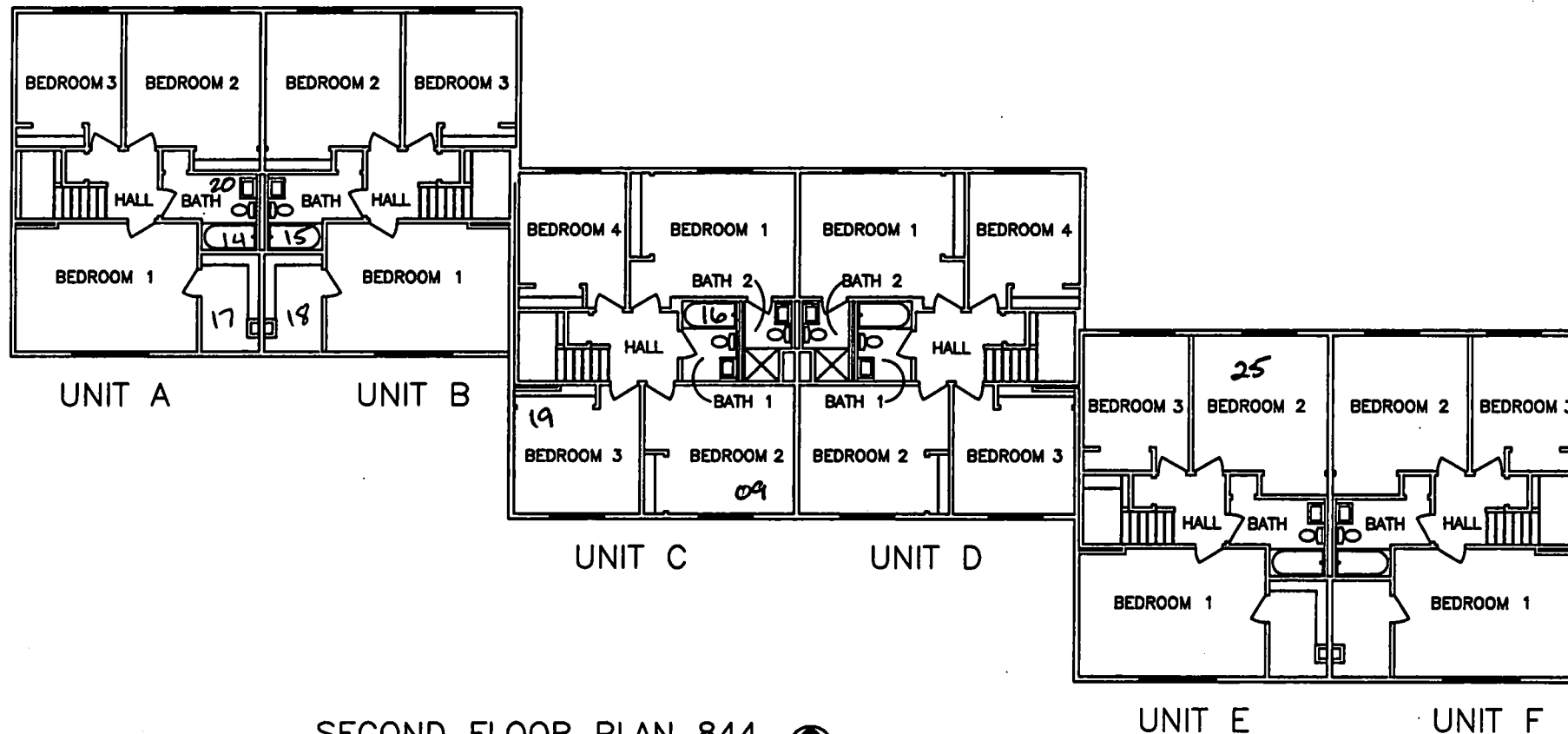
DRAWN: WM DATE: 9/16/04
APPROVED: ST SCALE: N.T.S.

FOR: DEPARTMENT OF THE NAVY
NAVAL FACILITIES
ENGINEERING COMMAND,
MIDWEST

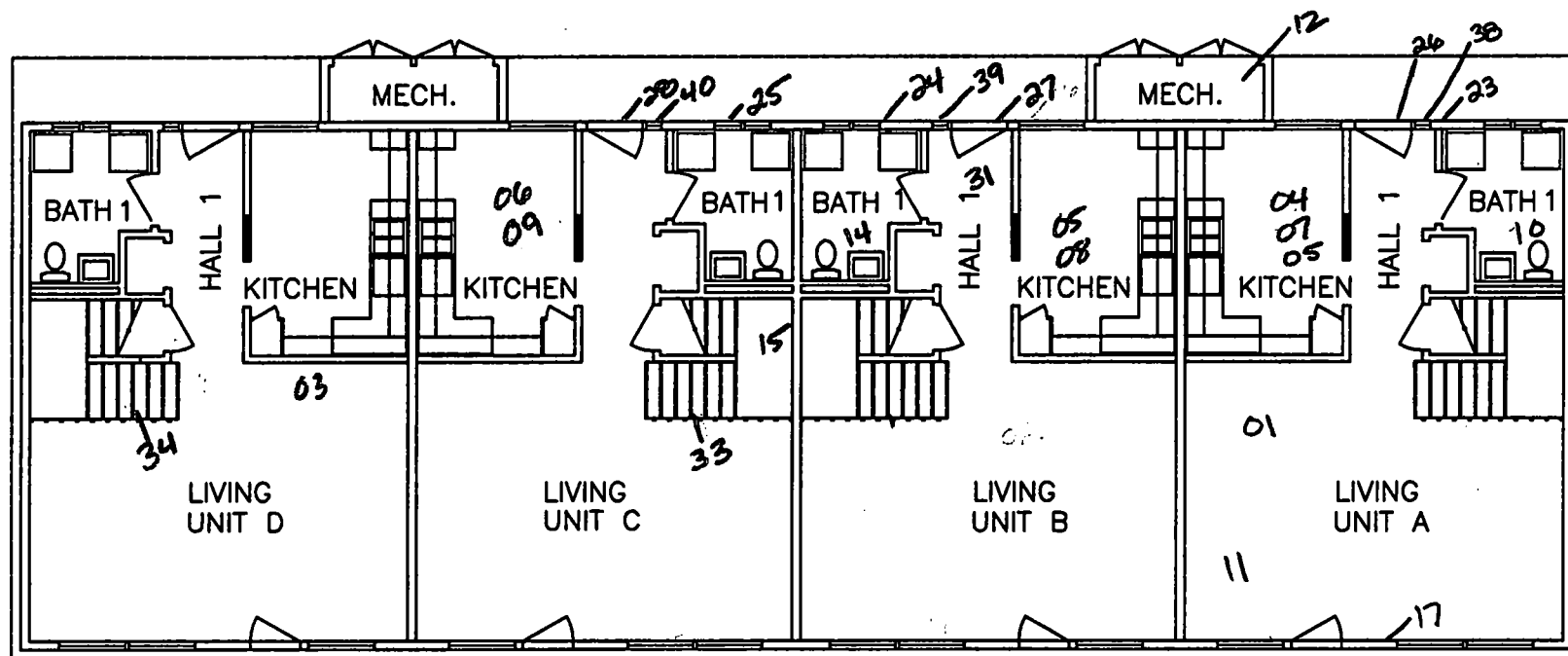
Versar INC.

100 W. 22nd STREET, SUITE 151
LOMBARD, IL 60148

PROJECT NO. 111155.0001.001
DRAWING NO. 844

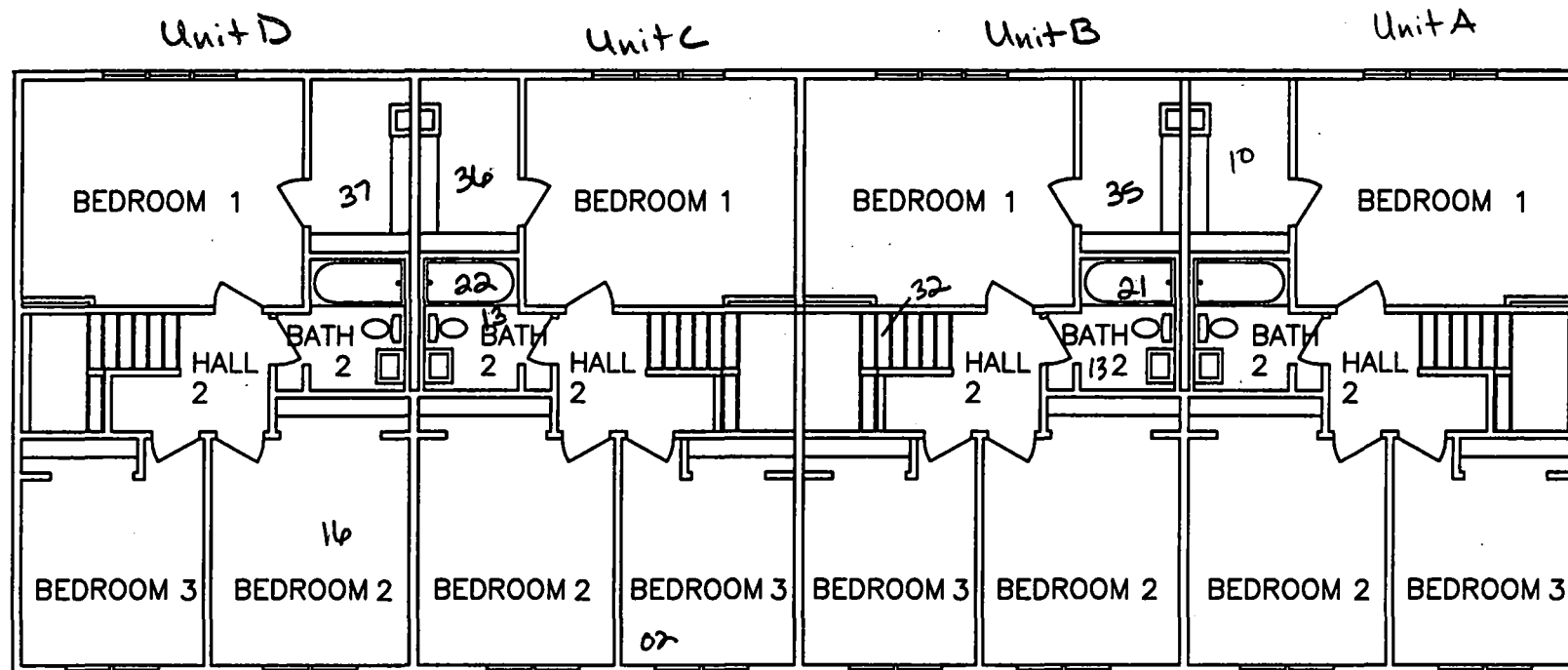


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DRAWN: WM	DATE: 9/16/04	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST
APPROVED: ST	SCALE: N.T.S.	
Versar INC. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		PROJECT NO. 111155.0001.001 DRAWING NO. 844



FIRST FLOOR PLAN BUILDING 845



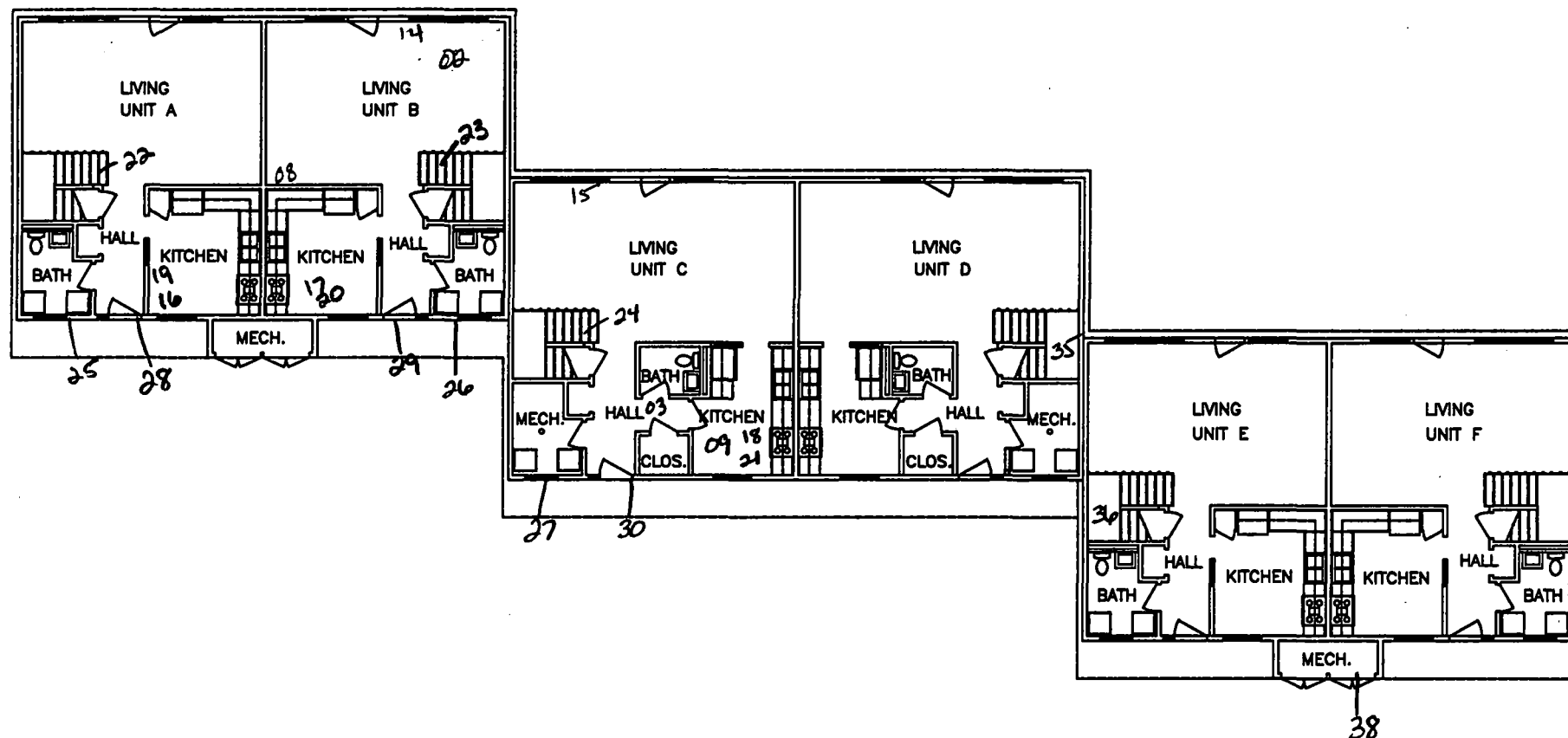


SECOND FLOOR PLAN BUILDING 845



NORTH

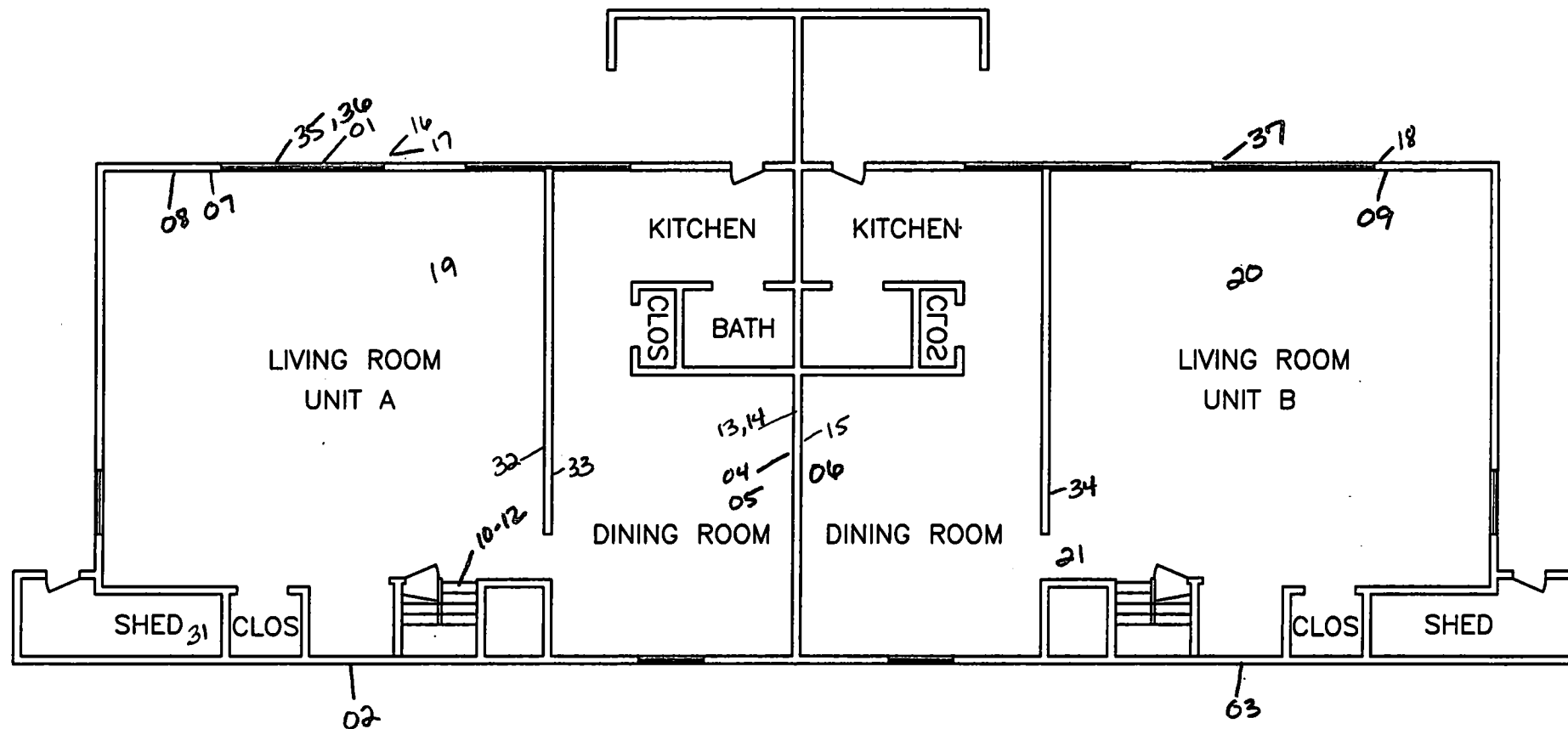
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DRAWN: WM		DATE: 9/16/04	
APPROVED: ST		SCALE: N.T.S.	
Versar inc. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST	
		PROJECT NO. 111155.0001.001	
		DRAWING NO. 845	



FIRST FLOOR PLAN 846



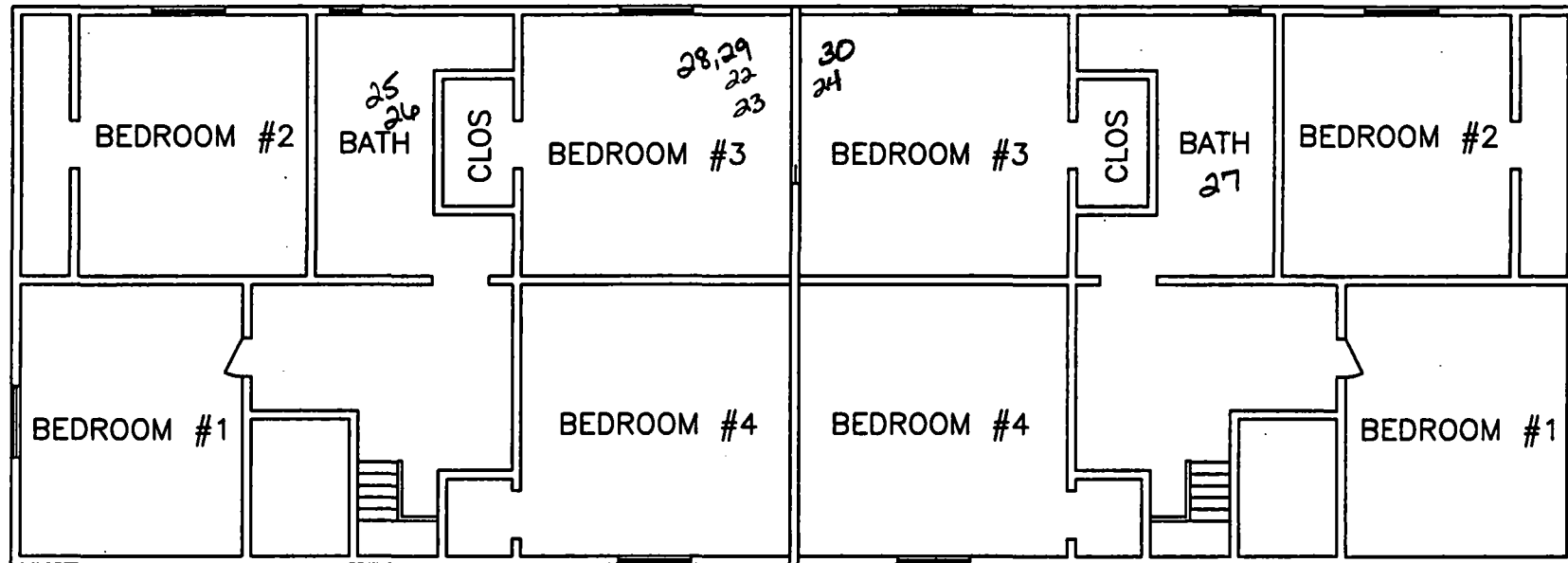
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DRAWN: WM	DATE: 9/16/04	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST
APPROVED: ST	SCALE: N.T.S.	
Versar inc. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		PROJECT NO. 111155.0001.001
		DRAWING NO. 846



FIRST FLOOR PLAN 848



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN 121 BOLES LOOP (BUILDING 848), UNIT A-B		
DRAWN: WM	DATE: 9/16/04	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST
APPROVED: ST	SCALE: N.T.S.	
Versar INC. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		PROJECT NO. 111155.0001.001 DRAWING NO. 848



UNIT A

UNIT B

SECOND FLOOR PLAN 848



TITLE: ACM SAMPLING LOCATIONS, FORT SHERIDAN 121 BOLES LOOP (BUILDING 848), UNIT A-B		
DRAWN: WM	DATE: 9/16/04	FOR: DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST
APPROVED: ST	SCALE: N.T.S.	
Versar INC. 100 W. 22nd STREET, SUITE 151 LOMBARD, IL 60148		PROJECT NO. 111155.0001.001 DRAWING NO. 848

APPENDIX G

LEAD-BASED PAINT BULK SUMMARY TABLE

**FT. SHERIDAN RESIDENTIAL UNITS
ENVIRONMENTAL SURVEY
LEAD RESULTS**

SAMPLE	LOCATION/DESCRIPTION	LEAD-BASED PAINT (Results in % by weight)	LEAD-CONTAINING PAINT (Results in % by weight)
846-L001	Bldg. 846, Unit A Kitchen - White Paint		< 0.02
846-L002	Bldg. 846, Unit A Exterior - Gray Trim		0.09
845-L003	Bldg. 845, Unit A Bathroom - White Paint		0.02
845-L004	Bldg. 845, Unit A Exterior Trim Around Door		0.33
845-L005	Bldg. 845, Unit A Fencing - Tan Paint		< 0.01
844-L006	Bldg. 844, Unit A 1st Floor Kitchen - White Paint		0.03
844-L007	Bldg. 844, Unit A Exterior Trim - White Paint		0.12
844-L008	Bldg. 844, Unit A Fencing - Tan Paint		<0.02
841-L009	Bldg. 841, Unit D Kitchen Ceiling - White Paint		0.02
841-L010	Bldg. 841, Unit D Fencing - Tan Paint		0.15
841-L011	Bldg. 841, Exterior Trim - White Paint		0.22
840-L012	Bldg. 840, Unit A Kitchen - White Paint		0.03
840-L013	Bldg. 840, Fencing - Tan Paint		<0.01
840-L014	Bldg. 840, Exterior Trim - White Paint		0.17
839-L015	Bldg. 839, Kitchen - White Paint		0.01
839-L016	Bldg. 839, Fencing - Tan Paint		<0.02
839-L017	Bldg. 839, Exterior Trim - White Paint	0.60	
838-L018	Bldg. 838, Laundry Room, White Paint		0.03
838-L019	Bldg. 838 Fencing - Maroon Paint		<0.01
838-L020	Bldg. 838 Exterior Trim - White Paint	0.51	
843-L03	Bldg. 843 Exterior - White Trim		<0.04
843-L04	Bldg. 843 Exterior Fence/Building - Red		<0.01
843-L05	Bldg. 843 Interior - White		<0.01
842-L01	Bldg. 842 Interior - White		0.01
842-L02	Bldg. 842 Exterior Under Trim - White/Gray		<0.02
842-L03	Bldg. 842 Exterior Fence/Building - Tan		<0.04
835-L01	Bldg. 835 Interior - White		<0.01
835-L02	Bldg. 835 Exterior Trim - White		0.16
835-L03	Bldg. 835 Exterior Fence/Building - Tan		<0.02
834-L01	Bldg. 834, Interior - White		0.03
834-L02	Bldg. 834 Exterior Trim - White		<0.04
834-L03	Bldg. 834 Exterior Building/Fence - Tan		<0.04
836-L01	Bldg. 836 Exterior Building/Fence - Tan		<0.01
836-L02	Bldg. 836 Exterior Trim - White		0.44
836-L03	Bldg. 836 Interior - White		<0.01
837-L01	Bldg. 837 Interior - White		0.04
837-L02	Bldg. 837 Exterior Trim - White		0.27
837-L03	Bldg. 837 Exterior Building/Fence - Tan		<0.01
848-L01	Bldg. 848 Interior - White		<0.01
848-L02	Bldg. 848 Exterior - Gray		0.27
848-L03	Bldg. 848 Exterior Trim - White		0.05
R-835-L01	Bldg. 835 Roof	37.00	
R-836-L02	Bldg. 836 Roof	31.00	
R-836-L03	Bldg. 836 Roof	33.00	

Note: HUD hazard level for painted areas: Total lead as measured in a laboratory by AA or ICP for paint chips is 5000 parts per million (ppm) or 0.5% by weight.

APPENDIX H

**LEAD-BASED PAINT SOIL SAMPLE SUMMARY TABLE
AND
CHAIN-OF-CUSTODY FORMS**

**FT. SHERIDAN RESIDENTIAL UNITS
ENVIRONMENTAL SURVEY
LEAD SOIL RESULTS**

SAMPLE	LOCATION/DESCRIPTION	IEPA SOIL REMEDIAION OBJECTIVE	LEAD CONCENTRATION
834-L01	Building 834 Exterior	400 mg/kg	81 mg/kg
835-L01	Building 835 Exterior	400 mg/kg	58 mg/kg
836-L01	Building 836 Exterior	400 mg/kg	50 mg/kg
837-L01	Building 837 Exterior	400 mg/kg	46 mg/kg
838-L01	Building 838 Exterior	400 mg/kg	51 mg/kg
839-L01	Building 839 Exterior	400 mg/kg	41 mg/kg
840-L01	Building 840 Exterior	400 mg/kg	51 mg/kg
841-L01	Building 841 Exterior	400 mg/kg	< 40 mg/kg
842-L01	Building 842 Exterior	400 mg/kg	97 mg/kg
843-L01	Building 843 Exterior	400 mg/kg	49 mg/kg
844-L01	Building 844 Exterior	400 mg/kg	55 mg/kg
845-L01	Building 845 Exterior	400 mg/kg	< 40 mg/kg
846-L01	Building 846 Exterior	400 mg/kg	83 mg/kg
848-L01	Building 848 Exterior	400 mg/kg	62 mg/kg

mg/kg = milligram per kilogram

Note: The IEPA soil remediation objective is 400 mg/kg.



Chain of Custody

Lead Lab Services

Lead
soil

EMSL Analytical, Inc.
2001 East 52nd Street
Indianapolis, IN 46205

Phone: (317) 803-2997
Fax: (317) 803-3047
<http://www.emsl.com>

Please print all information legibly.

Company:	Versar Inc.	Bill To:	Versar Inc.
Address1:	100 West 22nd Street	Address1:	100 West 22nd Street
Address2:	Suite 151	Address2:	Suite 151
City, State:	Lombard, IL	City, State:	Lombard, IL
Zip/Post Code:	60148	Zip/Post Code:	60148
Country:		Country:	
Contact Name:	Shaun Terranova	Attn:	Shaun Terranova
Phone:	630-268-8555	Phone:	630-268-8555
Fax:	630-268-0555	Fax:	630-268-0555
Email:		Email:	
EMSL Rep:	Paul Nyfield	P.O. Number:	
Project Name/Number: Fort Sheridan Residences - 11155.0001.001			

MATRIX	METHOD	INSTRUMENT	RL (Reporting Limit)	TAT
Lead Chips*	SW846-7420, 3050B Mod./AOAC(974.02)	Flame Atomic Absorption	0.01% ++	
Lead WasteWater	SW846-7420	Flame Atomic Absorption	0.4 mg/l water 40 mg/kg (ppm) soil	4 days
Lead Soil +	or SW846-6010B	ICP	0.1 mg/l water 10 mg/kg (ppm) soil	
Lead in Air ***	NIOSH 7082 Mod.	Flame Atomic Absorption	4 ug/filter	
	or NIOSH 7300 Mod.	ICP	3.0 ug/filter	
Lead in Wipe^ <input checked="" type="checkbox"/> -ASTM List Wipe Type	SW846-7420 / HUD Appendix 14.2 Digest	Flame Atomic Absorption	10 ug/wipe	
<input checked="" type="checkbox"/> -non ASTM	or SW846-6010B	ICP	3.0 ug/wipe	
TCLP Lead **	SW846-1311/ 7420	Flame Atomic Absorption	0.4 mg/l (ppm)	
	or SW846-6010B	ICP	0.1 mg/l (ppm)	
STLC Lead (California) #	CA Title 22 66261.126/ SW846-7420	Flame Atomic Absorption	0.4 mg/l (ppm)	
	or SW846-6010B	ICP	0.1 mg/l (ppm)	
Lead in Air ****	NIOSH 7105 Mod.	Graphite Furnace Atomic Absorption	0.03 ug/filter	
Lead WasteWater	SW846-7421	Graphite Furnace Atomic Absorption	0.003 mg/l (ppm) water	
Lead Soil +			0.03 mg/kg (ppm) soil	
Lead in Drinking Water (check state Certification requirements)	EPA 239.2 / 200.9	Graphite Furnace Atomic Absorption	0.003 mg/l (ppm)	
Total Dust	NIOSH 0500-0600	Gravimetric Reduction	0.0001g	

TAT (Turnaround) - Same day, 24 hr - 1 Day, 2 Days, 3 Days, 4 Days, 5 Days, 6-10 Days

*, **, ***, ****, +, ++ # Please Refer to Price Quote

^ If no box is checked, non-ASTM is assumed

7459



Chain of Custody

Lead Lab Services

EMSL Analytical, Inc.
2001 East 52nd Street
Indianapolis, IN 46205

Phone: (317) 803-2997
Fax: (317) 803-3047
<http://www.emsl.com>

Please print all information legibly.

[illegible]

@Relinquished By: (Person) Shawn Leacock

Date: 8/31/04

Received at EMSL by: Jessie Brown UPS

Date: 9/1/04 945

Received at EMSL by: _____

Date: _____

Note: Please duplicate this form and use additional sheets if necessary.

© The individual signing and relinquishing these samples to the laboratory attests to the accuracy of the information reported on this chain of custody.

EMSL Analytical

2001 East 52nd St., Indianapolis, IN 46205

Phone: (317) 803-2997 Fax: (317) 803-3047 Email: indianapolislabs@emsl.com

EMSL

Attn: **Shaun Terranova**
Versar, Inc.
100 W. 22nd Street
Suite 151
Lombard, IL 60148

Customer ID: **VERS56**
Customer PO:
Received: **09/01/04 9:45 AM**
EMSL Order: **160407459**

Fax: (630) 268-0555 Phone: (630) 268-8555
Project: **Ft Sheridan Residence 111155.0001.001**

EMSL Proj:

Report Date: **9/8/2004****Lead in Soils by Flame AAS (SW 846, 7420)**

Lab ID:	Analyzed	RDL	Lead Concentration	Notes
0001	9/7/2004	40	81 mg/Kg	Collected: 8/31/2004
Client Sample 834-L01				
0002	9/7/2004	40	58 mg/Kg	Collected: 8/31/2004
Client Sample 835-L01				
0003	9/7/2004	40	50 mg/Kg	Collected: 8/31/2004
Client Sample 836-L01				
0004	9/7/2004	40	46 mg/Kg	Collected: 8/31/2004
Client Sample 837-L01				
0005	9/7/2004	40	51 mg/Kg	Collected: 8/31/2004
Client Sample 838-L01				
0006	9/7/2004	40	41 mg/Kg	Collected: 8/31/2004
Client Sample 839-L01				
0007	9/7/2004	40	51 mg/Kg	Collected: 8/31/2004
Client Sample 840-L01				
0008	9/7/2004	40	<40 mg/Kg	Collected: 8/31/2004
Client Sample 841-L01				
0009	9/7/2004	40	97 mg/Kg	Collected: 8/31/2004
Client Sample 842-L01				
0010	9/7/2004	40	49 mg/Kg	Collected: 8/31/2004
Client Sample 843-L01				
0011	9/7/2004	40	55 mg/Kg	Collected: 8/31/2004
Client Sample 844-L01				
0012	9/7/2004	40	<40 mg/Kg	Collected: 8/31/2004
Client Sample 845-L01				


or other approved signatory

Reporting limit is 40 mg/kg. The QC data associated with the sample results included in this report meet the recovery and precision requirements established by the AIHA, unless specifically indicated otherwise in the comment section. This report relates only to those items tested.

ACCREDITATIONS: AIHA Environmental Lead Laboratory Approval Program #157248

Date Printed: 9/8/2004 8:51:04 AM

PB w/RDL

Page 1 of 2

EMSL Analytical

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Phone: (317) 803-2887 Fax: (317) 803-3047 Email: indianapolislabs@emsl.com

EMSL

SM

Attn: **Shaun Terranova**
Versar, Inc.
100 W. 22nd Street
Suite 151
Lombard, IL 60148

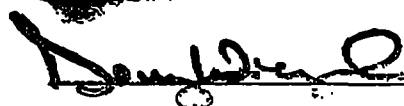
Customer ID: **VER556**
Customer PO:
Received: **09/01/04 9:45 AM**
EMSL Order: **160407459**

fax: (630) 268-0555 Phone: (630) 268-8555
Project: **Ft Sheridan Residence 111155.0001.001**

EMSL Proj:

Report Date: **9/8/2004****Lead in Soils by Flame AAS (SW 846, 7420)**

Lab ID:	Analyzed	RDL	Lead Concentration	Notes
0013	9/7/2004	40	83 mg/Kg	
Client Sample 848-L01				Collected: 8/31/2004
0014	9/7/2004	40	62 mg/Kg	
Client Sample 848-L01				Collected: 8/31/2004



or other approved signatory

Reporting limit is 40 mg/kg. The QC data associated with the sample results included in this report meet the recovery and precision requirements established by the AIHA, unless specifically indicated otherwise in the comment section. This report relates only to those items tested.

ACCREDITATIONS: AIHA Environmental Lead Laboratory Approval Program #157245

Date Printed: 9/8/2004 8:51:06 AM

APPENDIX I

LEAD PAINT INVENTORY

**RESIDENTIAL BUILDINGS
ENVIRONMENTAL SURVEY
LEAD INVENTORY**

SAMPLE	LOCATION/DESCRIPTION	QUANTITY
839-L017	Bldg. 839, Exterior Trim - White Paint	2,000 SF
838-L020	Bldg. 838 Exterior Trim - White Paint	2,000 SF
R-835-L01	Bldg. 835 Roof - Roofs of all 14 buildings	200 SF
R-836-L02	Bldg. 836 Roof	N/A
R-836-L03	Bldg. 836 Roof	N/A

SF = square foot

Note: All quantities are field estimates and should be verified prior to demolition activities.

APPENDIX J

**LEAD-BASED PAINT LABORATORY DATA SHEETS
AND
CHAIN-OF-CUSTODY FORMS**

160407542 Page 1 of 2



Chain of Custody

Lead Lab Services

Lead
Chips

EMSL Analytical, Inc.
2001 East 52nd Street
Indianapolis, IN 46205

Phone: (317) 803-2997
Fax: (317) 803-3047
<http://www.emsl.com>

Please print all information legibly.

Company:	Versar Inc.	Bill To:	Versar Inc.
Address1:	100 West 22nd Street	Address1:	100 West 22nd Street
Address2:	Suite 151	Address2:	Suite 151
City, State:	Lombard, IL	City, State:	Lombard, IL
Zip/Post Code:	60148	Zip/Post Code:	60148
Country:		Country:	
Contact Name:	Shaun Terranova	Attn:	Shaun Terranova
Phone:	630-268-8555	Phone:	630-268-8555
Fax:	630-268-0555	Fax:	630-268-0555
Email:		Email:	
EMSL Rep:	Paul Nyfield	P.O. Number:	
Project Name/Number: Fort Sheridan Residences - 11155.0001.001			

MATRIX	METHOD	INSTRUMENT	RL (Reporting Limit)	TAT
Lead Chips*	SW846-7420, 3050B Mod/AOAC(974.02)	Flame Atomic Absorption	0.01% ++	3 day
Lead WasteWater	SW846-7420	Flame Atomic Absorption	0.4 mg/l water 40 mg/kg (ppm) soil	
Lead Soil +	or SW846-6010B	ICP	0.1 mg/l water 10 mg/kg (ppm) soil	
Lead in Air ***	NIOSH 7082 Mod.	Flame Atomic Absorption	4 ug/filter	
	or NIOSH 7300 Mod.	ICP	3.0 ug/filter	
Lead in Wipe^ <input type="checkbox"/> -ASTM List Wipe Type	SW846-7420 / HUD Appendix 14.2 Digest	Flame Atomic Absorption	10 ug/wipe	
<input type="checkbox"/> -non ASTM	or SW846-6010B	ICP	3.0 ug/wipe	
TCLP Lead **	SW846-1311/ 7420	Flame Atomic Absorption	0.4 mg/l (ppm)	
	or SW846-6010B	ICP	0.1 mg/l (ppm)	
STLC Lead (California) #	CA Title 22 66261.126/ SW846-7420	Flame Atomic Absorption	0.4 mg/l (ppm)	
	or SW846-6010B	ICP	0.1 mg/l (ppm)	
Lead in Air ****	NIOSH 7105 Mod.	Graphite Furnace Atomic Absorption	0.03 ug/filter	
Lead WasteWater	SW846-7421	Graphite Furnace Atomic Absorption	0.003 mg/l (ppm) water	
Lead Soil +			0.03 mg/kg (ppm) soil	
Lead in Drinking Water (check state Certification requirements)	EPA 239.2 / 200.9	Graphite Furnace Atomic Absorption	0.003 mg/l (ppm)	
Total Dust	NIOSH 0500-0600	Gravimetric Reduction	0.0001g	

TAT (Turnaround) - Same day, 24 hr - 1 Day, 2 Days, 3 Days, 4 Days, 5 Days, 6-10 Days

*, **, ***, ****, +, ++, # Please Refer to Price Quote

^ If no box is checked, non-ASTM is assumed



Chain of Custody

Lead Lab Services

EMSL Analytical, Inc.
2001 East 52nd Street
Indianapolis, IN 46205

Phone: (317) 803-2997
Fax: (317) 803-3047
<http://www.emsl.com>

Please print all information legibly.

SAMPLE #	LOCATION	Air Volume, L Area, in ²	LAB #
846-L001	White Paint - Big A		
846-L002	Grey Paint - Big A		
845-L003	White Paint - Big A		
845-L004	White Paint - Big A		
845-L005	Tan Paint - Big A		
844-L006	White Paint - Unit A		
844-L007	White Paint - Unit A		
844-L008	Tan Paint - Unit A		
841-L009	White Paint - Unit A		
841-L010	Tan Paint - Unit A		
841-L011	White Paint - Unit A		
840-L012	White Paint - Unit A		
840-L013	Tan Paint - Unit A		
840-L014	White Paint - Unit A		
839-L015	White Paint - Unit A		
839-L016	Tan Paint - Unit A		
839-L017	White Paint - Unit A		
838-L018	White Paint - Unit A		
838-L019	White Paint - Unit A		
838-L020	White Paint - Unit A		

@Relinquished By: (Person) Shane Senatore

Date: 9/2/04

Received at EMSL by: [Signature]

Date: 7-3-04 10:25 URS

Received at EMSL by: _____

Date: _____

Note: Please duplicate this form and use additional sheets if necessary.

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Chain of Custody

Lead Lab Services

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Indianapolis, IN 46205

Phone: (317) 803-2997
Fax: (317) 803-3047
<http://www.emsl.com>

Please print all information legibly.

SAMPLE #	LOCATION	Air Volume, L Area, in ²	LAB #
835 835 L-1	835 Roof	10-12 l.f.	
836 836 L-2	836 Roof	per roof	
836 836 L-3	836 Roof		
843103	Bldg 843 - Exterior	White Trim	
843-L-04	Bldg 843 - Exterior	Red Fence / Building	
843-L-05	Bldg 843 - Interior	White	
842-L-01	Bldg 842 - Interior	White	
842-L-02	Bldg 842 - Exterior	White / Corry (Under) Trim	
842-L-03	Bldg 842 - Tan	Fence / Building	
835-L-01	Bldg 835 - Interior	White	
835-L-02	Bldg 835 - Exterior	White Trim	
835-L-03	Bldg 835 - Exterior	Tan Fence / Bldg	
834-L-01	Interior	White - Bldg 834	
834-L-02	Exterior	White Trim - Bldg 834	
834-L-03	Exterior	Tan Bldg / Fence - Bldg 834	
836-L-01	Bldg 836 - Exterior	Tan Bldg / Fence	
836-L-02	↓	Exterior White Trim	
836-L-03	↓	Interior White	
837-L-01	Bldg 837 - Interior	White	
837-L-02	↓	Exterior - White Trim	
837-L-03	↓	Exterior Tan Bldg / Fence	
848-L-01	Bldg 848 - Interior	White	
↓ L-02	↓	Exterior - Gray	
↓ L-03	↓	Exterior - White Trim	

@Relinquished By: (Person)

Shawn Tenauer

Date: 9/2/04

Received at EMSL by: _____

Date: _____

Received at EMSL by: _____

Date: _____

Note: Please duplicate this form and use additional sheets if necessary.

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EMSL Analytical

2001 East 52nd St., Indianapolis, IN 46205

Phone: (317) 803-2897 Fax: (317) 803-3047 Email: indianapolislabs@emsl.com

EMSL

SAI

Attn: **Shaun Terranova**
Versar, Inc.
100 W. 22nd Street
Suite 151
Lombard, IL 60148

Customer ID: **VER556**
Customer PO:
Received: **09/03/04 10:25 AM**
EMSL Order: **160407542**

Fax: (630) 268-0555 Phone: (630) 268-8555
Project: **Ft Sheridan Res. - 111155.0001.001**

EMSL Proj:

Report Date: **9/9/2004****Lead in Paint Chips by Flame AAS (SW 846, 7420)**

Lab ID:	Analyzed	RDL	Lead Concentration	Notes
0001	9/9/2004	0.02	<0.02 % wt	
Client Sample 846-L001				Collected: 9/2/2004
0002	9/9/2004	0.01	0.09 % wt	
Client Sample 846-L002				Collected: 9/2/2004
0003	9/9/2004	0.01	0.02 % wt	
Client Sample 845-L003				Collected: 9/2/2004
0004	9/9/2004	0.02	0.33 % wt	
Client Sample 845-L004				Collected: 9/2/2004
0005	9/9/2004	0.01	<0.01 % wt	
Client Sample 845-L005				Collected: 9/2/2004
0006	9/9/2004	0.01	0.03 % wt	
Client Sample 844-L006				Collected: 9/2/2004
0007	9/9/2004	0.01	0.12 % wt	
Client Sample 844-L007				Collected: 9/2/2004
0008	9/9/2004	0.02	<0.02 % wt	
Client Sample 844-L008				Collected: 9/2/2004
0009	9/9/2004	0.01	0.02 % wt	
Client Sample 841-L009				Collected: 9/2/2004
0010	9/9/2004	0.01	0.15 % wt	
Client Sample 841-L010				Collected: 9/2/2004
0011	9/9/2004	0.01	0.22 % wt	
Client Sample 841-L011				Collected: 9/2/2004
0012	9/9/2004	0.01	0.03 % wt	
Client Sample 840-L012				Collected: 9/2/2004


or other approved signatory

Reporting limit is 0.01 % wt. The QC data associated with the sample results included in this report meet the recovery and precision requirements established by the AHA, unless specifically indicated otherwise in the comment section. This report relates only to those items tested.
ACCREDITATIONS: AHA Environmental Lead Laboratory Approval Program #157245

Date Printed: 9/9/2004 1:37:21 PM

PB w/RDL

Page 1 of 4

EMSL Analytical

2001 East 52nd St., Indianapolis, IN 46205

Phone: (317) 803-2887 Fax: (317) 803-3047 Email: indianapolislab@emsl.com

EMSL

Attn: **Shaun Terranova**
Versar, Inc.
100 W. 22nd Street
Suite 151
Lombard, IL 60148

Customer ID: **VER556**
Customer PO:
Received: **09/03/04 10:25 AM**
EMSL Order: **160407542**

Fax: (630) 268-0555 Phone: (630) 268-8555
Project: **Ft Sheridan Res. - 111155.0001.001**

EMSL Proj:

Report Date: **9/9/2004****Lead in Paint Chips by Flame AAS (SW 846, 7420)**

Lab ID:	Analyzed	RDL	Lead Concentration	Notes
0013	9/9/2004	0.01	<0.01 % wt	Collected: 9/2/2004
Client Sample 840-L013				
0014	9/9/2004	0.01	0.17 % wt	Collected: 9/2/2004
Client Sample 840-L014				
0015	9/9/2004	0.01	0.01 % wt	Collected: 9/2/2004
Client Sample 839-L015				
0016	9/9/2004	0.02	<0.02 % wt	Collected: 9/2/2004
Client Sample 839-L016				
0017	9/9/2004	0.01	0.60 % wt	Collected: 9/2/2004
Client Sample 839-L017				
0018	9/9/2004	0.01	0.03 % wt	Collected: 9/2/2004
Client Sample 838-L018				
0019	9/9/2004	0.01	<0.01 % wt	Collected: 9/2/2004
Client Sample 838-L019				
0020	9/9/2004	0.01	0.51 % wt	Collected: 9/2/2004
Client Sample 838-L020				
0021	9/9/2004	0.04	<0.04 % wt	Collected: 9/2/2004
Client Sample 843-L03				
0022	9/9/2004	0.01	<0.01 % wt	Collected: 9/2/2004
Client Sample 843-L04				
0023	9/9/2004	0.01	<0.01 % wt	Collected: 9/2/2004
Client Sample 843-L05				
0024	9/9/2004	0.01	0.01 % wt	Collected: 9/2/2004
Client Sample 842-L01				


or other approved signatory

Reporting limit is 0.01 % wt. The QC data associated with the sample results included in this report meet the recovery and precision requirements established by the AIHA, unless specifically indicated otherwise in the comment section. This report relates only to those items tested.
ACCREDITATIONS: AIHA Environmental Lead Laboratory Approval Program #157245

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PB w/RDL

Page 2 of 4

EMSL Analytical

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Phone: (317) 803-2887 Fax: (317) 803-3047 Email: indianapolislabs@emsl.com

EMSL

Attn: **Shaun Terranova**
Versar, Inc.
100 W. 22nd Street
Suite 151
Lombard, IL 60148

Customer ID: VERS56
 Customer PO:
 Received: 09/03/04 10:25 AM
 EMSL Order: 160407542

Fax: (630) 268-0555 Phone: (630) 268-8555
 Project: Ft Sheridan Res. - 111155.0001.001

EMSL Proj:

Report Date: 9/9/2004

Lead in Paint Chips by Flame AAS (SW 846, 7420)

Lab ID:	Analyzed	RDL	Lead Concentration	Notes
0025	9/9/2004	0.02	<0.02 % wt	Collected: 9/2/2004
<i>Client Sample 842-L02</i>				
0026	9/9/2004	0.04	<0.04 % wt	Collected: 9/2/2004
<i>Client Sample 842-L03</i>				
0027	9/9/2004	0.01	<0.01 % wt	Collected: 9/2/2004
<i>Client Sample 835-L01</i>				
0028	9/9/2004	0.02	0.16 % wt	Collected: 9/2/2004
<i>Client Sample 835-L02</i>				
0029	9/9/2004	0.02	<0.02 % wt	Collected: 9/2/2004
<i>Client Sample 835-L03</i>				
0030	9/9/2004	0.01	0.03 % wt	Collected: 9/2/2004
<i>Client Sample 834-L01</i>				
0031	9/9/2004	0.04	<0.04 % wt	Collected: 9/2/2004
<i>Client Sample 834-L02</i>				
0032	9/9/2004	0.04	<0.04 % wt	Collected: 9/2/2004
<i>Client Sample 834-L03</i>				
0033	9/9/2004	0.01	<0.01 % wt	Collected: 9/2/2004
<i>Client Sample 836-L01</i>				
0034	9/9/2004	0.01	0.44 % wt	Collected: 9/2/2004
<i>Client Sample 836-L02</i>				
0035	9/9/2004	0.01	<0.01 % wt	Collected: 9/2/2004
<i>Client Sample 836-L03</i>				
0036	9/9/2004	0.01	0.04 % wt	Collected: 9/2/2004
<i>Client Sample 837-L01</i>				


 or other approved signatory

Reporting limit is 0.01 % wt. The QC data associated with the sample results included in this report meet the recovery and precision requirements established by the AIHA, unless specifically indicated otherwise in the comment section. This report relates only to those items tested.
 ACCREDITATIONS: AIHA Environmental Lead Laboratory Approval Program #157245

Date Printed: 9/9/2004 1:37:25 PM

PB w/RDL

Page 3 of 4

EMSL Analytical

2001 East 52nd St., Indianapolis, IN 46205

Phone: (317) 803-2997 Fax: (317) 803-3047 Email: indianapolislabs@emsl.com

EMSL

SM

Attn: **Shaun Terranova**
Versar, Inc.
100 W. 22nd Street
Suite 151
Lombard, IL 60148

Customer ID: VERS56
Customer PO:
Received: 09/03/04 10:25 AM
EMSL Order: 160407542

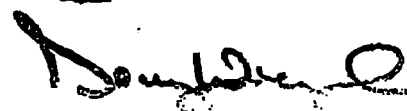
Fax: (630) 268-0555 Phone: (630) 268-8565
Project: Ft Sheridan Res. - 111155.0001.001

EMSL Proj:

Report Date: 9/9/2004

Lead in Paint Chips by Flame AAS (SW 846, 7420)

Lab ID:	Analyzed	RDL	Lead Concentration	Notes
0037	9/9/2004	0.01	0.27 % wt	
Client Sample 837-L02				Collected: 9/2/2004
0038	9/9/2004	0.01	<0.01 % wt	
Client Sample 837-L03				Collected: 9/2/2004
0039	9/9/2004	0.01	<0.01 % wt	
Client Sample 848-L01				Collected: 9/2/2004
0040	9/9/2004	0.01	0.27 % wt	
Client Sample 848-L02				Collected: 9/2/2004
0045	9/9/2004	0.01	37.00 % wt	
Client Sample R835 L1				Collected: 9/2/2004
0046	9/9/2004	0.01	31.00 % wt	
Client Sample R836 L2				Collected: 9/2/2004
0047	9/9/2004	0.01	33.00 % wt	
Client Sample R836 L3				Collected: 9/2/2004



or other approved signatory

Reporting limit is 0.01 % wt. The QC data associated with the sample results included in this report meet the recovery and precision requirements established by the AHA, unless specifically indicated otherwise in the comment section. This report relates only to those items tested.
ACCREDITATIONS: AHA Environmental Lead Laboratory Approval Program #157245

Date Printed: 9/9/2004 1:37:27 PM

PB w/RDL

Page 4 of 4

Chain of Custody

Lead Lab Services

EMSL Analytical, Inc.
2001 East 52nd Street
Indianapolis, IN 46205

Phone: (317) 803-2997
Fax: (317) 803-3047
<http://www.emsl.com>

Please print all information legibly.

Company:	Versar Inc.	Bill To:	Versar Inc.
Address1:	100 West 22nd Street	Address1:	100 West 22nd Street
Address2:	Suite 151	Address2:	Suite 151
City, State:	Lombard, IL	City, State:	Lombard, IL
Zip/Post Code:	60148	Zip/Post Code:	60148
Country:		Country:	
Contact Name:	Shaun Terranova	Attn:	Shaun Terranova
Phone:	630-268-8555	Phone:	630-268-8555
Fax:	630-268-0555	Fax:	630-268-0555
Email:		Email:	
EMSL Rep:	Paul Nyfield	P.O. Number:	
Project Name/Number: Fort Sheridan Residences - 11155.0001.001			

MATRIX	METHOD	INSTRUMENT	RL (Reporting Limit)	TAT
Lead Chips*	SW846-7420, 3050B Mod./AOAC(974.02)	Flame Atomic Absorption	0.01% ++	3 day
Lead WasteWater	SW846-7420	Flame Atomic Absorption	0.4 mg/l water 40 mg/kg (ppm) soil	
Lead Soil +	or SW846-6010B	ICP	0.1 mg/l water 10 mg/kg (ppm) soil	
Lead in Air ***	NIOSH 7082 Mod.	Flame Atomic Absorption	4 ug/filter	
	or NIOSH 7300 Mod.	ICP	3.0 ug/filter	
Lead in Wipe^ <input type="checkbox"/> -ASTM List Wipe Type <input type="checkbox"/> -non ASTM	SW846-7420 / HUD Appendix 14.2 Digest	Flame Atomic Absorption	10 ug/wipe	
	or SW846-6010B	ICP	3.0 ug/wipe	
TCLP Lead **	SW846-1311/ 7420	Flame Atomic Absorption	0.4 mg/l (ppm)	
	or SW846-6010B	ICP	0.1 mg/l (ppm)	
STLC Lead (California) #	CA Title 22 66261.126/ SW846-7420	Flame Atomic Absorption	0.4 mg/l (ppm)	
	or SW846-6010B	ICP	0.1 mg/l (ppm)	
Lead in Air ****	NIOSH 7105 Mod.	Graphite Furnace Atomic Absorption	0.03 ug/filter	
Lead WasteWater	SW846-7421	Graphite Furnace Atomic Absorption	0.003 mg/l (ppm) water	
Lead Soil +			0.03 mg/kg (ppm) soil	
Lead in Drinking Water (check state Certification requirements)	EPA 239.2 / 200.9	Graphite Furnace Atomic Absorption	0.003 mg/l (ppm)	
Total Dust	NIOSH 0500-0600	Gravimetric Reduction	0.0001g	

TAT (Turnaround) - Same day, 24 hr - 1 Day, 2 Days, 3 Days, 4 Days, 5 Days, 6-10 Days

*, **, ***, ****, +, ++, # Please Refer to Price Quote

^ If no box is checked, non-ASTM is assumed

Chain of Custody

Lead Lab Services

EMSL Analytical, Inc.
2001 East 52nd Street
Indianapolis, IN 46205

Phone: (317) 803-2997
Fax: (317) 803-3047
<http://www.emsl.com>

Please print all information legibly.

SAMPLE #	LOCATION	Air Volume, L Area, in ²	LAB #
835 P-835 L-1	835 Roof	10-12 f.f.	
836 P-836 L-2	836 Roof	per roof	
836 P-836 L-3	836 Roof		
843-103	Bldg 843 - Exterior	White Trim	
843-L-04	Bldg 843 - Exterior	Red Fence / Building	
843-L-05	Bldg 843 - Interior	White	
842-L-01	Bldg 842 - Interior	White	
842-L-02	Bldg 842 - Exterior	White / Tan (Under) Trim	
842-L-03	Bldg 842 - Tan	Fence / Building	
835-L-01	Bldg 835 - Interior	White	
835-L-02	Bldg 835 - Exterior	White Trim	
835-L-03	Bldg 835 - Exterior	Tan Fence / Bldg	
834-L-01	Interior White	Bldg 834	
834-L-02	Exterior - White Trim	- Bldg 834	
834-L-03	Exterior - Tan Building / Fence	- Bldg 834	
836-L-01	Bldg 836 - Exterior	Tan Bldg / Fence	
836-L-02	↓ - Exterior	White Trim	
836-L-03	↓ - Interior	White	
837-L-01	Bldg 837 - Interior	White	
837-L-02	↓ - Exterior	White Trim	
837-L-03	↓ - Exterior	Tan Bldg / Fence	
848-L-01	Bldg 848 - Interior	White	
↓ L-02	↓ - Exterior	Gray	
↓ L-03	↓ - Exterior	White Trim	

@Relinquished By: (Person)

Shane Tennant

Date:

9/4/04

Received at EMSL by:

Date:

Received at EMSL by:

Date:

Note: Please duplicate this form and use additional sheets if necessary.

© The individual signing and relinquishing these samples to the laboratory attests to the accuracy of the information reported on this chain of custody.

EMSL Analytical

2001 East 52nd St., Indianapolis, IN 46205

Phone: (317) 803-2997 Fax: (317) 803-3047 Email: indianapolislabs@emsl.com

EMSL

Attn: **Shaun Terranova**
Versar, Inc.
100 W. 22nd Street
Suite 151
Lombard, IL 60148

Customer ID: **VERS56**
Customer PO:
Received: **09/10/04 1:28 PM**
EMSL Order: **160407728**

Fax: (630) 268-0555 Phone: (630) 268-8555
Project: **Ft. Sheridan Res -0111155.0001.001**

EMSL Proj:

Report Date: **9/10/2004****Lead in Paint Chips by Flame AAS (SW 846, 7420)**

Lab ID:	Analyzed	RDL	Lead Concentration	Notes
0001	9/10/2004	0.01	0.05 % wt	
Client Sample 848-L-03				Collected: 9/2/2004


or other approved signatory

Reporting limit is 0.01 % wt. The QC data associated with the sample results included in this report meet the recovery and precision requirements established by the AIHA, unless specifically indicated otherwise in the comment section. This report relates only to those items tested.

ACCREDITATIONS: AIHA Environmental Lead Laboratory Approval Program #157245

Date Printed: 9/10/2004 5:10:55 PM

PB w/RDL

Page 3 of 3

APPENDIX K
LABORATORY QUALIFICATIONS

United States Department of Commerce
National Institute of Standards and Technology



ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation



EMSL ANALYTICAL INC.
CHICAGO, IL

*is recognized by the National Voluntary Laboratory Accreditation Program
for satisfactory compliance with criteria set forth in NIST Handbook 150:2001,
all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994.
Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:*

BULK ASBESTOS FIBER ANALYSIS

March 31, 2005

Effective through

A handwritten signature, identified as John P. Walsh, is written over a horizontal line.

For the National Institute of Standards and Technology
NVLAP Lab Code: 200399-0

National Institute
of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation



Page: 1 of 1

BULK ASBESTOS FIBER ANALYSIS

NVLAP LAB CODE 200399-0

EMSL ANALYTICAL INC.

2444 West George St.

Chicago, IL 60618

Ms. Sandra C. Sobrino

Phone: 773-313-0099 Fax: 773-313-0139

URL: <http://www.emsl.com>

NVLAP Code

Designation

18/A01

EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2005

Effective through

A handwritten signature in black ink, appearing to read "John P. M...".

For the National Institute of Standards and Technology

United States Department of Commerce
National Institute of Standards and Technology



ISO/IEC 17025:1999
ISO 9002:1994



EMSL ANALYTICAL, INC.
INDIANAPOLIS, IN

*is recognized by the National Voluntary Laboratory Accreditation Program
for satisfactory compliance with criteria set forth in NIST Handbook 150:2001,
all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994.
Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:*

BULK ASBESTOS FIBER ANALYSIS

March 31, 2005

Effective through

For the National Institute of Standards and Technology
NVLAP Lab Code: 200188-0



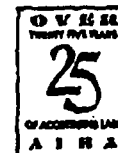
The American Industrial Hygiene Association

acknowledges that

EMSL Analytical, Inc.

Indianapolis, IN

Laboratory #157245



has fulfilled the requirements of the AIHA Laboratory Quality Assurance Programs (LQAP), thereby, conforming to the ISO/IEC 17025 International standard, *General Requirements for the Competence of Testing and Calibration Laboratories*. The above named laboratory has been accredited by AIHA in the following:

ACCREDITATION PROGRAMS

- ☐ INDUSTRIAL HYGIENE
- ☒ ENVIRONMENTAL LEAD
- ☐ ENVIRONMENTAL MICROBIOLOGY
- ☐ FOOD
- ☐ OTHER

Accreditation Expires:


Accreditation Expires: 09/01/05

Accreditation Expires:

Accreditation Expires:

Accreditation Expires:

Specific categories of testing, within each Accreditation Program, for which the above named laboratory maintains accreditation is outlined on the attached Scope of Accreditation. Continued accreditation is contingent upon successful on-going compliance with LQAP requirements. This certificate is not valid without the attached Scope of Accreditation.


Dawn D. Thomas, ASQ Certified Quality Mgr.
Chairperson, Analytical Accreditation Board


Henry B. Jack, CIH, CSP, PhD, ROH
President, AIHA

AIHA Laboratory Quality Assurance Programs

SCOPE OF ACCREDITATION

EMSL Analytical, Inc.

Laboratory ID: 157245

Indianapolis, IN

Clients are urged to verify the laboratory's accreditation status for particular categories of testing. Lists of accredited laboratories with current scope of accreditation and analytical methods where specified are available on the AIHA website at www.aiha.org/lists.html. The "▼" symbol indicates that the laboratory is approved for specific analytical methods within that category of testing. A list of current analytical methods covering the scopes for which the laboratory is accredited shall be available to customers and the accreditation body from the laboratory upon request.

<input type="checkbox"/> IHLAP Initial Accreditation Date: 00/00/00	<div style="text-align: center;">OVER TWENTY FIVE YEARS 25 OF ACCREDITING LABS</div>			
Inorganics			Organics	Asbestos
<input type="checkbox"/> Ion Chromatography			<input type="checkbox"/> GC	<input type="checkbox"/> Air
<input type="checkbox"/> Atomic Absorption & Emission			<input type="checkbox"/> IR	<input type="checkbox"/> Optical Microscopy
<input type="checkbox"/> ICP, DCP, ICP-MS	<input type="checkbox"/> LC	<input type="checkbox"/> Electron Microscopy		
<input type="checkbox"/> Infra-Red (IR)	<input type="checkbox"/> GC/MS			
<input type="checkbox"/> UV/VIS	<input type="checkbox"/> UV/VIS			
<input type="checkbox"/> Gravimetric	<input type="checkbox"/> Other (Technique & Method Specific)	Bulk		
<input type="checkbox"/> Titrimetric		<input type="checkbox"/> Optical Microscopy		
<input type="checkbox"/> Ion-Selective Electrode (ISE)		<input type="checkbox"/> Electron Microscopy		
<input type="checkbox"/> XRD				
<input type="checkbox"/> Other (Technique & Method Specific)				
<input checked="" type="checkbox"/> ELLAP Initial Accreditation Date: 09/01/02	<input type="checkbox"/> OTHER Initial Accreditation Date: 00/00/00			
<input checked="" type="checkbox"/> Paint	<input type="checkbox"/> Method - Specific			
<input checked="" type="checkbox"/> Soil				
<input checked="" type="checkbox"/> Dust				
<input checked="" type="checkbox"/> Air				
<input type="checkbox"/> EMLAP Initial Accreditation Date: 00/00/00				
Fungal	Bacterial	Fungal Direct Examination		
Laboratory Culture	Non-Culture	Non-Culture		
<input type="checkbox"/> Air	<input type="checkbox"/> Air	<input type="checkbox"/> Bulk		
<input type="checkbox"/> Bulk	<input type="checkbox"/> Bulk	<input type="checkbox"/> Direct Examination		
		<input type="checkbox"/> Tape Slides		
<input type="checkbox"/> FOODLAP Initial Accreditation Date: 00/00/00				
Microbiology	Residue Chemistry	Residue Chemistry		
Quantitative & Qualitative	Quantitative	Quantitative		
Analyte Class	Analyte Class	Analyte Class		
<input type="checkbox"/> Salmonella	<input type="checkbox"/> Moisture	<input type="checkbox"/> Pesticides (Halogenated, NP, Carbamate)		
<input type="checkbox"/> Listeria	<input type="checkbox"/> Protein	<input type="checkbox"/> Halogenated Hydrocarbons		
<input type="checkbox"/> E. coli 0157:H7	<input type="checkbox"/> Salt	<input type="checkbox"/> Sulfonamides		
<input type="checkbox"/> E. coli	<input type="checkbox"/> Ash	<input type="checkbox"/> Nitrosamines		
<input type="checkbox"/> Staphylococcus	<input type="checkbox"/> Vitamins	<input type="checkbox"/> Toxic Elements		
<input type="checkbox"/> Yeast/Mold	<input type="checkbox"/> Minerals	<input type="checkbox"/> Mycotoxins		
<input type="checkbox"/> Aerobic Plate Count	<input type="checkbox"/> Dietary Fiber	<input type="checkbox"/> Drug Residue		
<input type="checkbox"/> Coliform	<input type="checkbox"/> Sugars	<input type="checkbox"/> Other		
<input type="checkbox"/> Other	<input type="checkbox"/> Cholesterol			
	<input type="checkbox"/> Sodium			
	<input type="checkbox"/> Other			

APPENDIX L
VERSAR QUALIFICATIONS

State of Illinois A149829
Department of Public Health

LICENSE, PERMIT, CERTIFICATION, REGISTRATION

The person, firm or corporation whose name appears on this certificate has complied with the provisions of the Illinois Statutes and/or rules and regulations and is hereby authorized to engage in the activity as indicated below.

ERIC E. WHITAKER, M.D., M.P.H.
DIRECTOR

Issued under the authority of
The State of Illinois
Department of Public Health

EXPIRATION DATE	CATEGORY	ID NUMBER
05/15/2005	319	100-01338

JERRY WILSON
PROJECT DESIGNER MANAGEMENT PLANNER
INSPECTOR AIR SAMPLING PROFESSIONAL

BUSINESS ADDRESS
ASBESTOS PROFESSIONAL LICENSE
WARNING THIS CERTIFICATE MAY RESULT IN LEGAL ACTION

JERRY WILSON
404 NORTH CENTER STREET
COLFAX IL 61728

**THIS LICENSE IS NOT VALID IF YOUR IDPH
COURSE CERTIFICATE IS NOT CURRENT**

Printed by Authority of the State of Illinois 2/01

State of Illinois A149829
Department of Public Health

LICENSE, PERMIT, CERTIFICATION, REGISTRATION
ASBESTOS PROFESSIONAL LICENSE

EXPIRATION DATE	CATEGORY	ID NUMBER
05/15/2005	319	100-01338

JERRY WILSON
PROJECT DESIGNER MANAGEMENT PLANNER
INSPECTOR AIR SAMPLING PROFESSIONAL

THE PERSON, FIRM OR CORPORATION WHOSE NAME APPEARS ON THIS CERTIFICATE HAS COMPLIED WITH THE PROVISIONS OF THE ILLINOIS STATUTES AND/OR RULES AND REGULATIONS AND IS HEREBY AUTHORIZED TO ENGAGE IN THE ACTIVITY INDICATED ON THE FACE OF THIS CARD.

ISSUED UNDER THE AUTHORITY OF
STATE OF ILLINOIS
DEPARTMENT OF PUBLIC HEALTH

[Signature]

SIGNATURE OF LICENSEE

**Moraine Valley Community College
Environmental Institute
AHERA Accreditation**

This certificate is awarded to

JERRY WILSON

In recognition of attending the required eight hour refresher course and successfully passing the written examination, attaining a score of 70 percent or greater, for accreditation as a:

Project Designer

<i>Course Date</i>	<i>Test Date</i>	<i>Expiration Date</i>	<i>Social Security #</i>	<i>Accreditation #</i>
January 16, 2004	January 16, 2004	January 16, 2005	395-68-8321	104PDR006

This course is fully approved by the U.S. EPA only for purposes of accreditation under Title II of the Toxic Substances Control Act, 40 CFR part 763. This course is further approved by the Illinois Department of Public Health and the Indiana Department of Environmental Management.



**Moraine Valley
Community College**

10900 South 88th Avenue
Palos Hills, IL 60465-0837
708-974-5416

Gary E. Krupa
Director of Professional
Development and Technical
Education.



State of Illinois
Department of Public Health

A 145063

LICENSE, PERMIT, CERTIFICATION, REGISTRATION

The person, firm or corporation whose name appears on this certificate has complied with the provisions of the Illinois Statutes and/or rules and regulations and is hereby authorized to engage in the activity as indicated below.

ERIC E. WHITAKER, M.D. M.P.H.
DIRECTOR

Issued under the authority of
The State of Illinois
Department of Public Health

EXPIRATION DATE	CATEGORY	I.D. NUMBER
01/31/2005	5317	L- 002600
Shaun Terranova LEAD INSPECTOR/RISK ASSESSOR		

BUSINESS ADDRESS

Versar
100 W. 22nd St., Ste. 151
Lombard IL 60148

**YOUR CURRENT TRAINING COURSE
CERTIFICATE EXPIRES 10/17/2006**

Printed by Authority of the State of Illinois • 2/91 •

State of Illinois A 145063

Department of Public Health

LICENSE, PERMIT, CERTIFICATION, REGISTRATION

EXPIRATION DATE	CATEGORY	I.D. NUMBER
01/31/2005	5317	L- 002600

Shaun



Terranova

LEAD INSPECTOR/RISK ASSESSOR LICENSE



Occupational Training & Supply, Inc.

12601 S. Springfield • Alsip, IL 60803 • 708 / 385-1325

Shaun Terranova

343-68-4213

has successfully completed the 8 hour Lead Risk Assessor Refresher course and has passed the competency exam with a minimum score of 70%. This course is accredited by the Illinois Department of Public Health in accordance with the Illinois Lead Poisoning Prevention Code.

Lead Risk Assessor Refresher

Course Date: October 17, 2003
Expiration Date: October 17, 2006

Exam Date: October 17, 2003
Certificate: LRAR0310172535

2003


Kathy Nicholson, Director



State of Illinois
Department of Public Health

A149775

LICENSE, PERMIT, CERTIFICATION, REGISTRATION

The person, firm or corporation whose name appears on this certificate has complied with the provisions of the Illinois Statutes and/or rules and regulations and is hereby authorized to engage in the activity as indicated below.

ERIC E. WHITAKER, M.D. M.P.H.
DIRECTOR

Issued under the authority of
The State of Illinois
Department of Public Health

EXPIRATION DATE	CATEGORY	I.D. NUMBER
05/15/2005	319	100-03064
SHAUN TERRANOVA MANAGEMENT PLANNER PROJECT MANAGER INSPECTOR AIR SAMPLING PROFESSIONAL		

BUSINESS ADDRESS

ASBESTOS PROFESSIONAL LICENSE

ALTERING THIS CERTIFICATE MAY RESULT IN LEGAL ACTION

SHAUN TERRANOVA

209 LAKESHORE LANE

BLOOMINGDALE IL 60108

THIS LICENSE IS NOT VALID IF YOUR IDPH
COURSE CERTIFICATE IS NOT CURRENT

Printed by Authority of the State of Illinois • 2/91 •

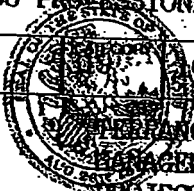
State of Illinois A149775

Department of Public Health

LICENSE PERMIT, CERTIFICATION, REGISTRATION
ASBESTOS PROFESSIONAL LICENSE

EXPIRATION DATE
05/15/2005

ID NUMBER
00-03064



SHAUN

PERRANOVA

MANAGEMENT PLANNER

PROJECT MANAGER

INSPECTOR

AIR SAMPLING PROFESSIONAL

THE PERSON, FIRM OR CORPORATION WHOSE NAME APPEARS
ON THIS CERTIFICATE HAS COMPLIED WITH THE PROVISIONS
OF THE ILLINOIS STATUTES AND/OR RULES AND REGULATIONS
AND IS HEREBY AUTHORIZED TO ENGAGE IN THE ACTIVITY
INDICATED ON THE FACE OF THIS CARD.



ISSUED UNDER THE AUTHORITY OF
STATE OF ILLINOIS
DEPARTMENT OF PUBLIC HEALTH

SIGNATURE OF LICENSEE



Occupational Training & Supply, Inc.

12601 S. Springfield • Alsip, IL 60803 • 708 / 385-1325

Shaun Terranova

343-68-4213


has successfully completed the 4 hour Asbestos Building Inspector Refresher course and has passed the competency exam with a minimum score of 70%. This course is accredited by the Illinois Department of Public Health and the Indiana Department of Environmental Management for purposes of accreditation in accordance with EPA 40 CFR 763, Asbestos Hazard Emergency Response Act (AHERA) and TSCA Title II.

Asbestos Building Inspector Refresher

Course Date: June 10, 2004
Expiration Date: June 10, 2005

Exam Date: June 10, 2004
Certificate: BIR0406101712

2004


Kathy Nicholson, Director

LEAD INSPECTOR/RISK ASSESSOR LICENSE



Curt

01/31/2005	EXPIRATION DATE
001190	ID NUMBER

State of Illinois A143574
Department of Public Health
LICENSE, PERMIT, CERTIFICATION, REGISTRATION

State of Illinois A14921
Department of Public Health

LICENSE, PERMIT, CERTIFICATION, REGISTRATION
ASBESTOS PROFESSIONAL LICENSE

05/15/2005	EXPIRATION DATE
00-03976	ID NUMBER

CURTIS



INSPECTOR PROJECT MANAGER
AIR SAMPLING PROFESSIONAL



2004

This is to certify that

Curtis R. Cannon

310-56-9921

Has Satisfactorily Completed Training in
Accordance with Applicable Rules and
Regulations

**Asbestos Building
Inspector Refresher**

Completed: August 03, 2004

Expires: August 03, 2005

Certificate

BIR0408031938

Occupational Training & Supply, Inc.
12601 S. Springfield • Alsip, IL 60803 • 708 / 385-1325



2001

This is to certify that
Curtis R. Cannon

310-56-9921

*Has Satisfactorily Completed Training in
Accordance with Applicable Rules and Regulations*

Lead Risk Assessor

Completed: November 02, 2001

Expires: November 02, 2004

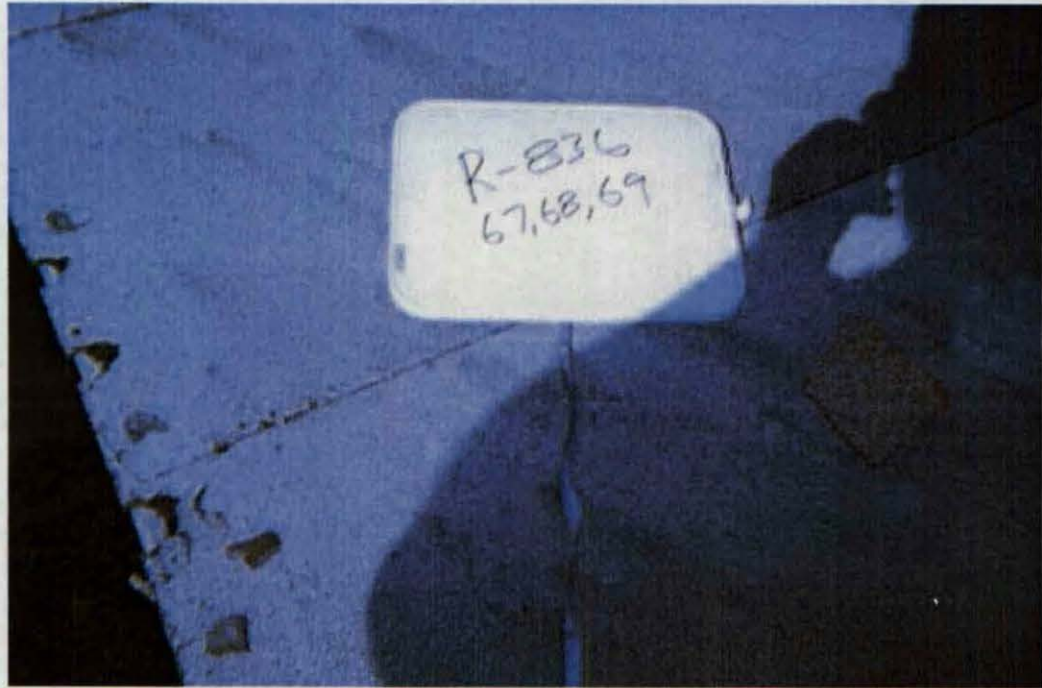
Certificate

LRA0111012981

Occupational Training & Supply, Inc.
12601 S. Springfield • Alsip, IL 60803 • 708 / 385-1325

APPENDIX M
PHOTOGRAPHS

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 836, Samples 67-69, asphalt roofing on shed



Transite stack, Samples 64-66

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 836, Samples 58-60, main roof roofing shingles

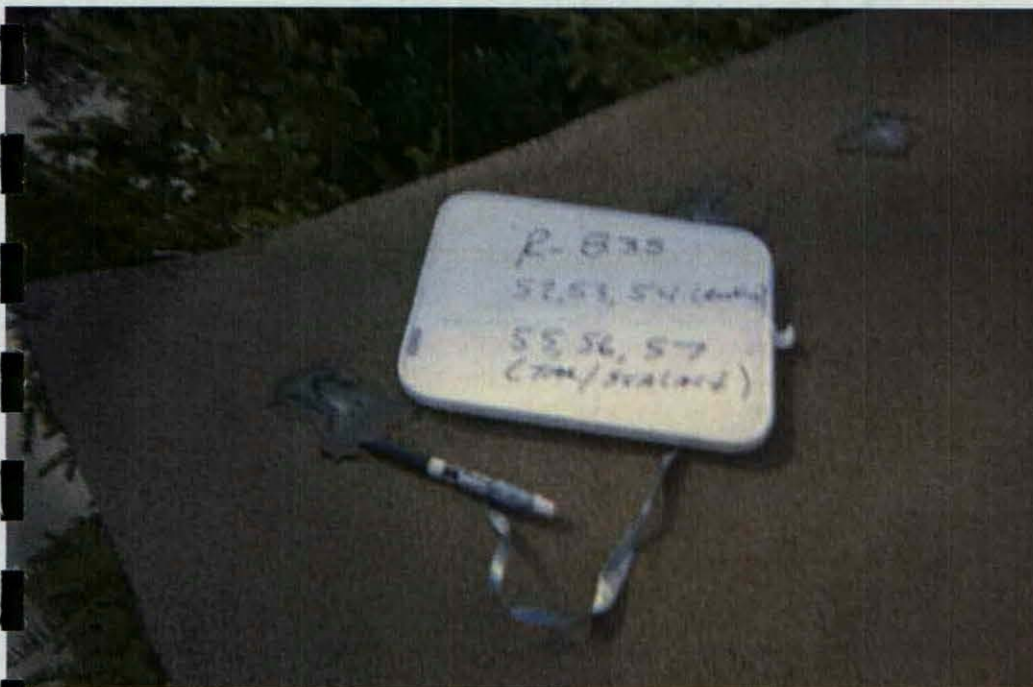


Black mastic sealant on roofing components, Samples 62-63,

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 836, Samples L-02 and L-03, lead stack

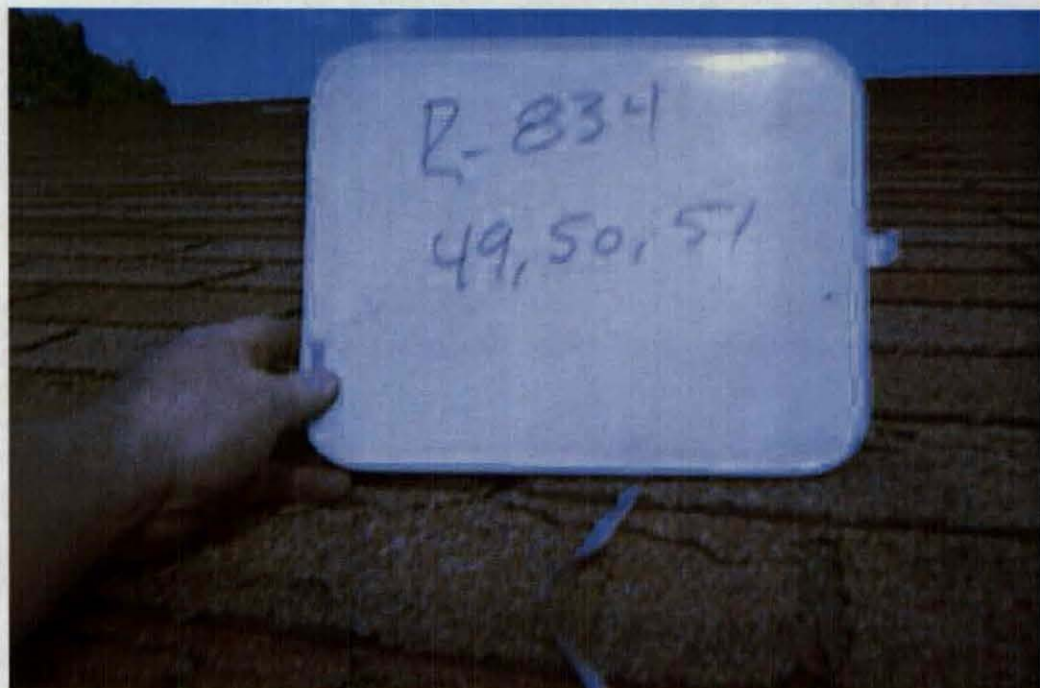


Building 835, Samples 52-57, asphalt roofing and tar sealant on sheds

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 834, Samples 46-48, asphalt roofing on sheds



Building 834, Samples 49-51, main roof shingles

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 834, Samples 37-39, main roof shingles

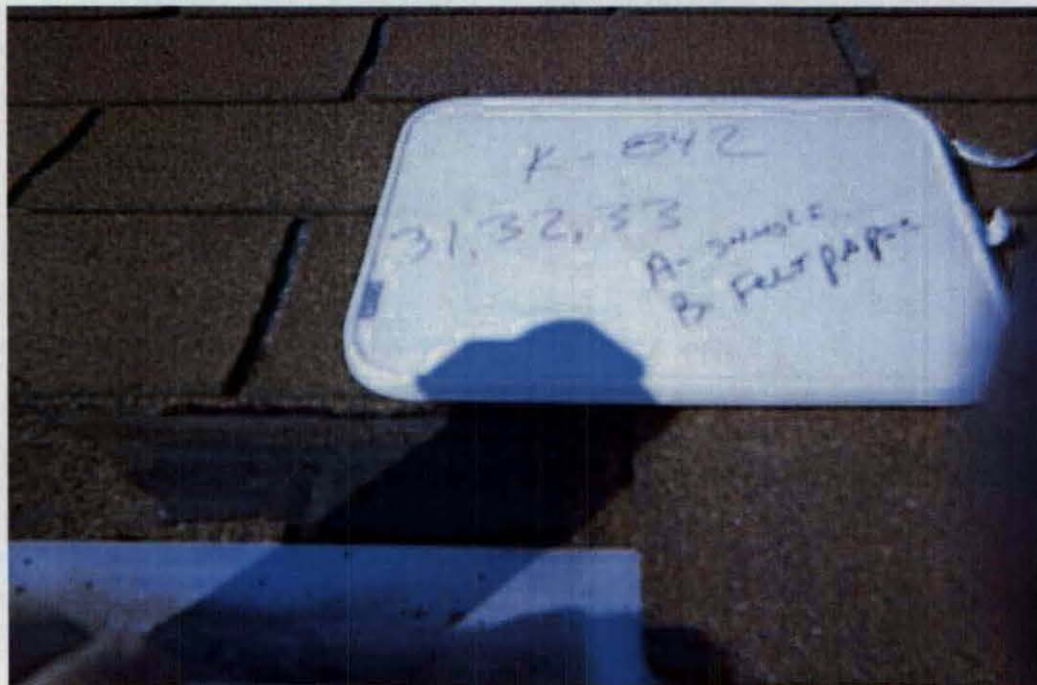


Building 834, Samples 40-45, brick mortar and cove mastic on roof

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 842, Samples 34-36, asphalt roof on shed



Building 842, Samples 31-33, roof shingle and tar paper

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 843, Samples 28-30, asphalt roof on shed



building 843, Samples 25-27, main roof shingle

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 844, Samples 19-21, asphalt roof on shed



Building 844, Samples 22-24, tar sealant on shed

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 845, samples 10-12, main roof shingle



Building, Samples 13-15, asphalt roof on shed

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 846, Samples 04-06, asphalt roof on shed

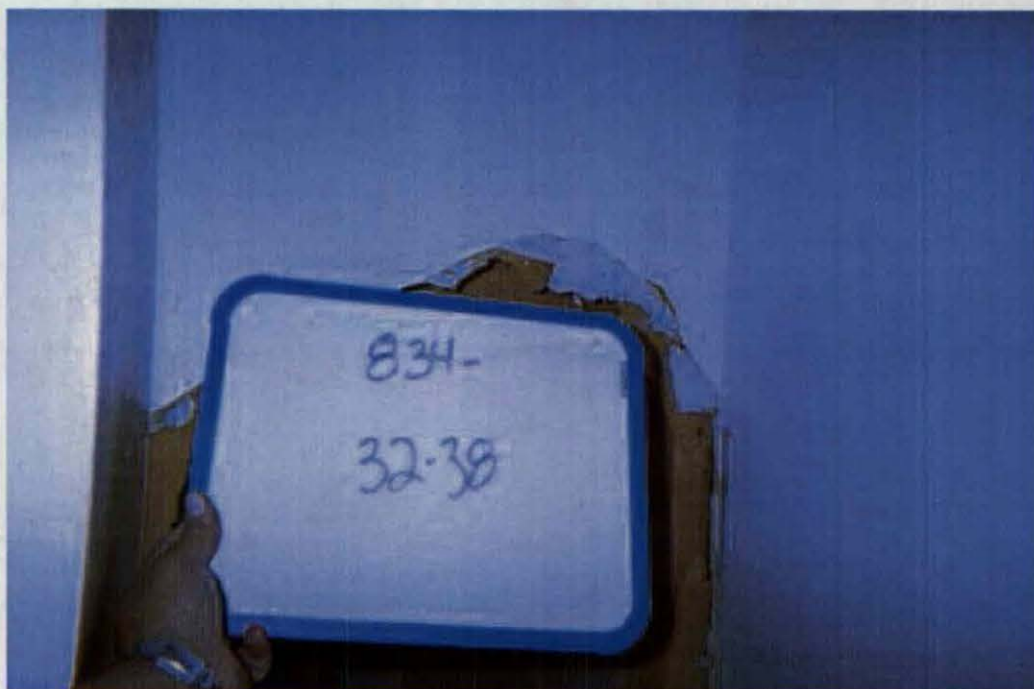


Building 846, Samples 07-09, tar sealant on roof

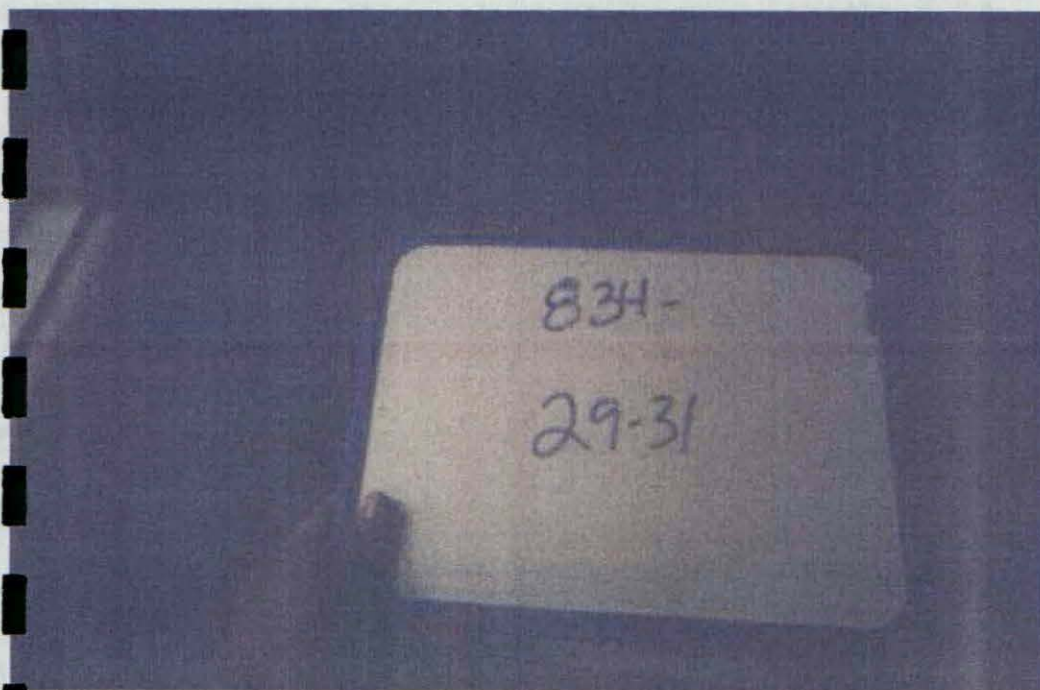
Fort Sheridan Residential Units, Fort Sheridan, IL



Building 846, Samples 01-03, main roof shingle



Building 834, Samples 32-38, drywall



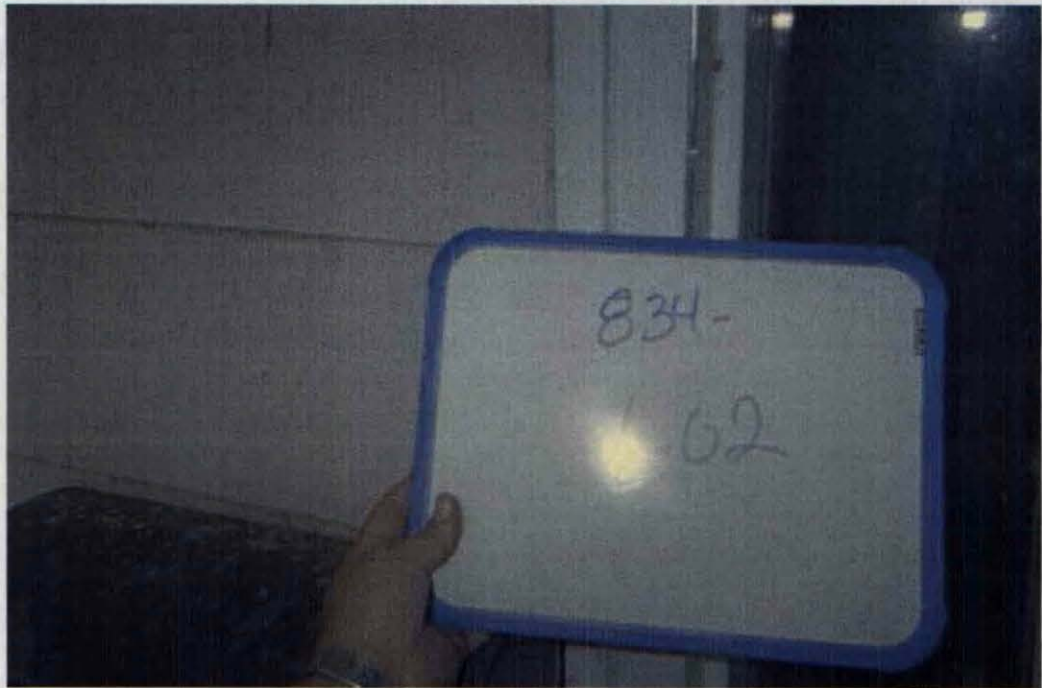
Building 834, Samples 29-31, attic insulation



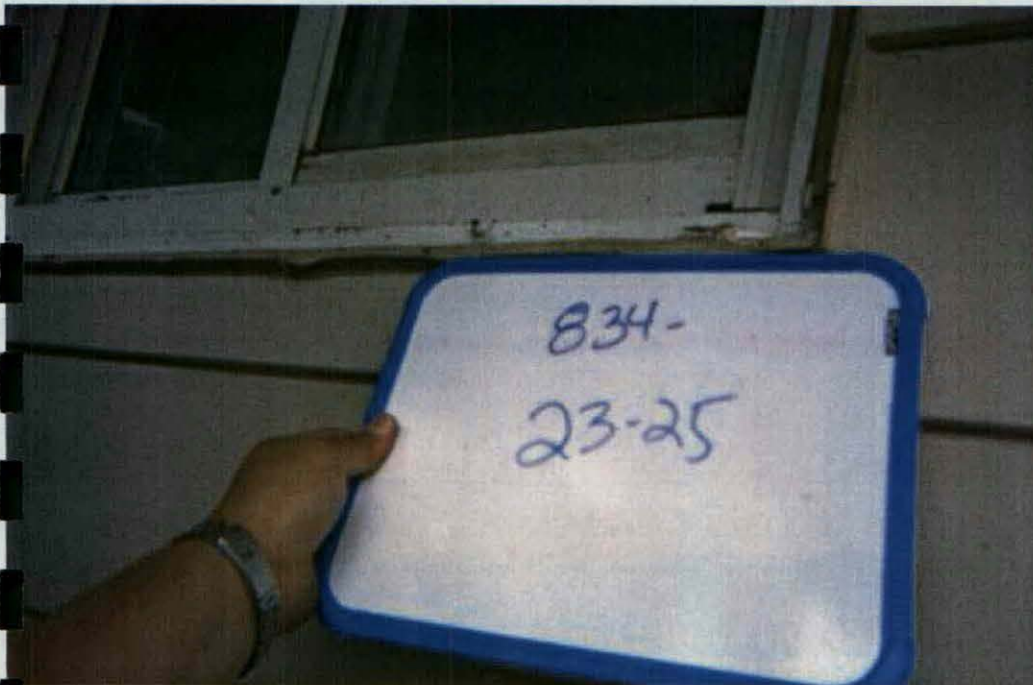
Building 834, L-03, exterior tan building/fence



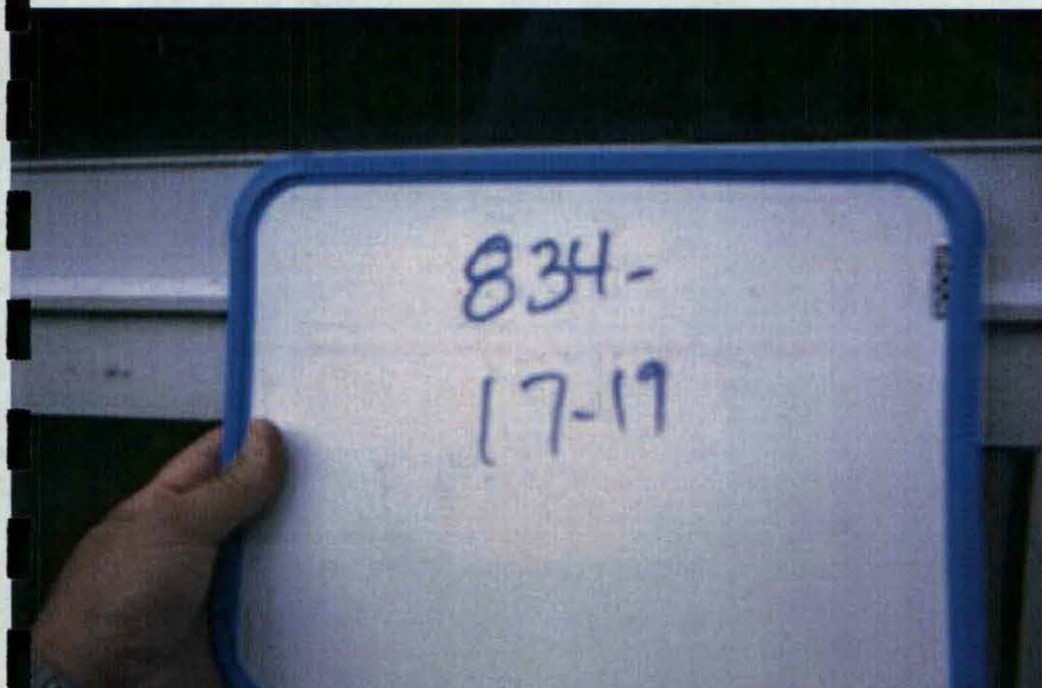
Building 834, Samples 26-28, tub caulk



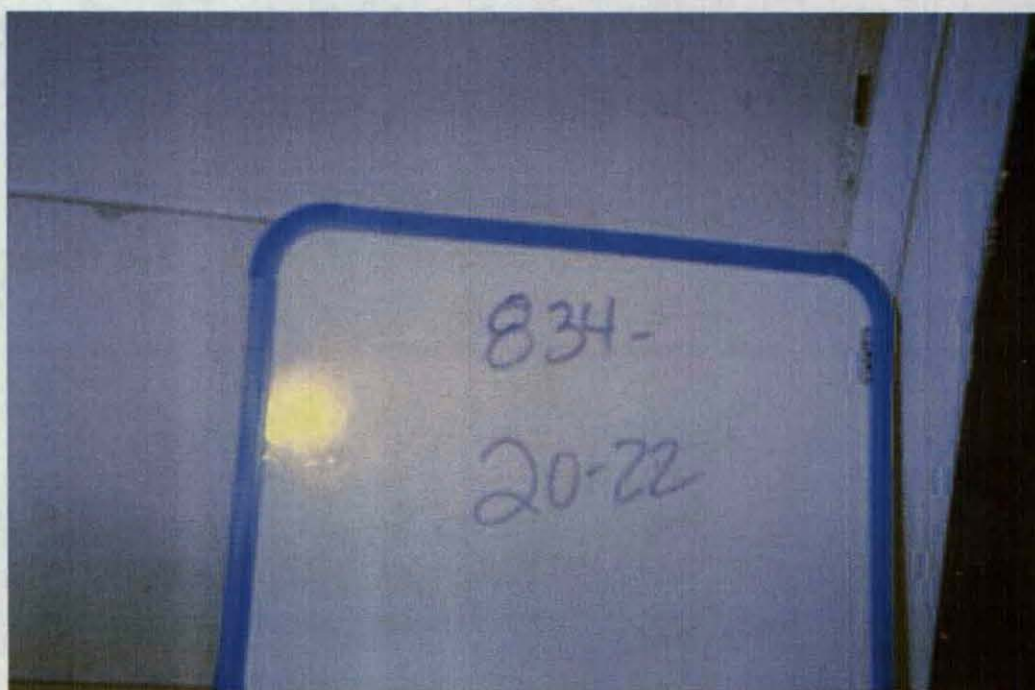
Building 834, Sample L-02, exterior white trim



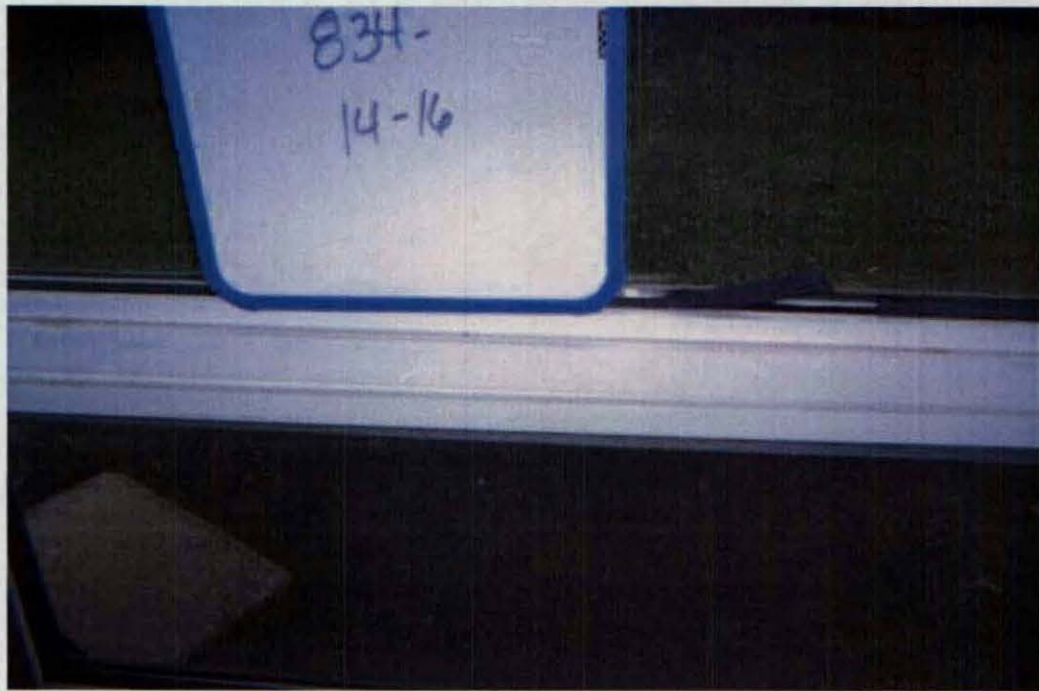
Building 834, Samples 23-25, exterior window caulk



Building 834, Samples 17-19, exterior black window gasket



Building 834, Sample 20-22, exterior door caulk



Building 834, Samples 14-16, interior window gasket



Building 834, Samples 08-10, vinyl baseboard



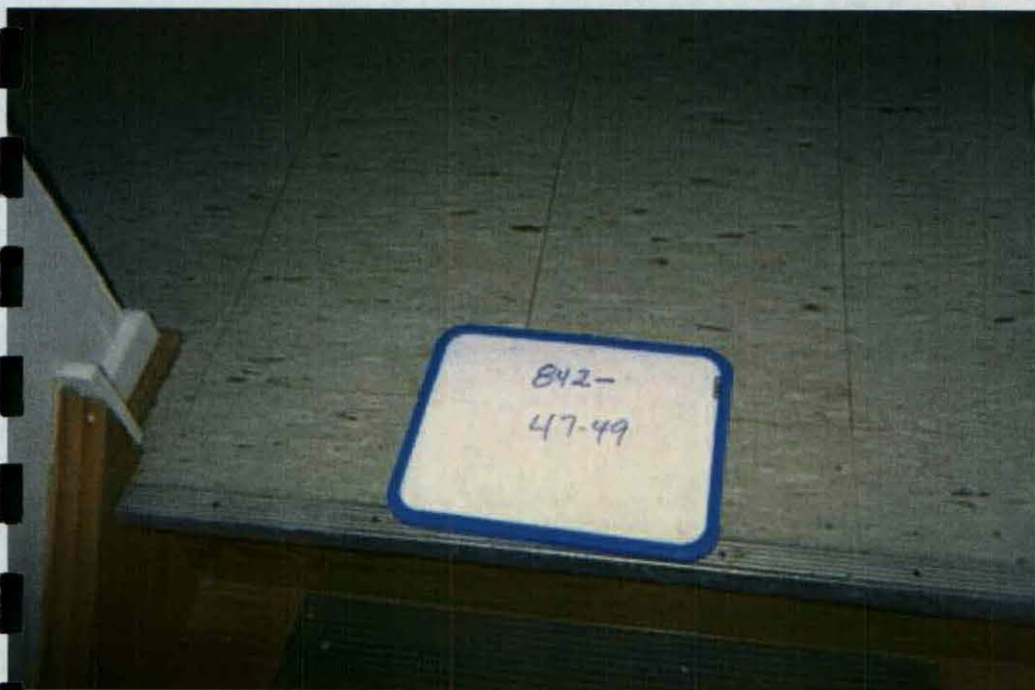
Building 834, Sample 04, 12x12 tan with white streaks replacement tile



Building 834, Samples 05-07, 12x12 gray floor tile and mastic

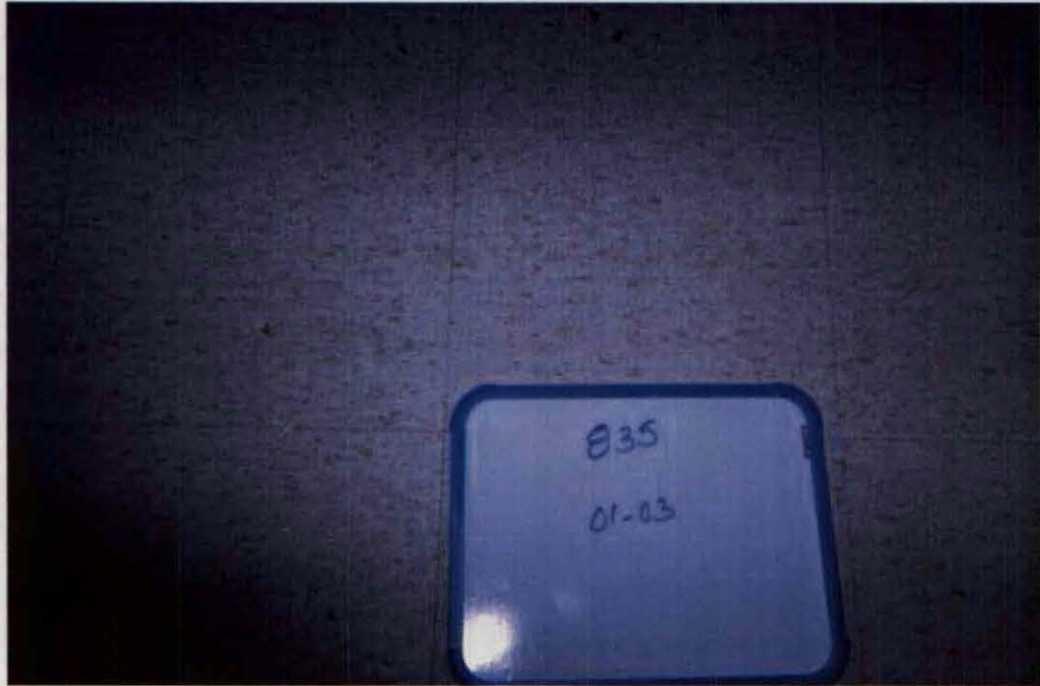


Building 834, Samples 01-03, 12x12 tan floor tile

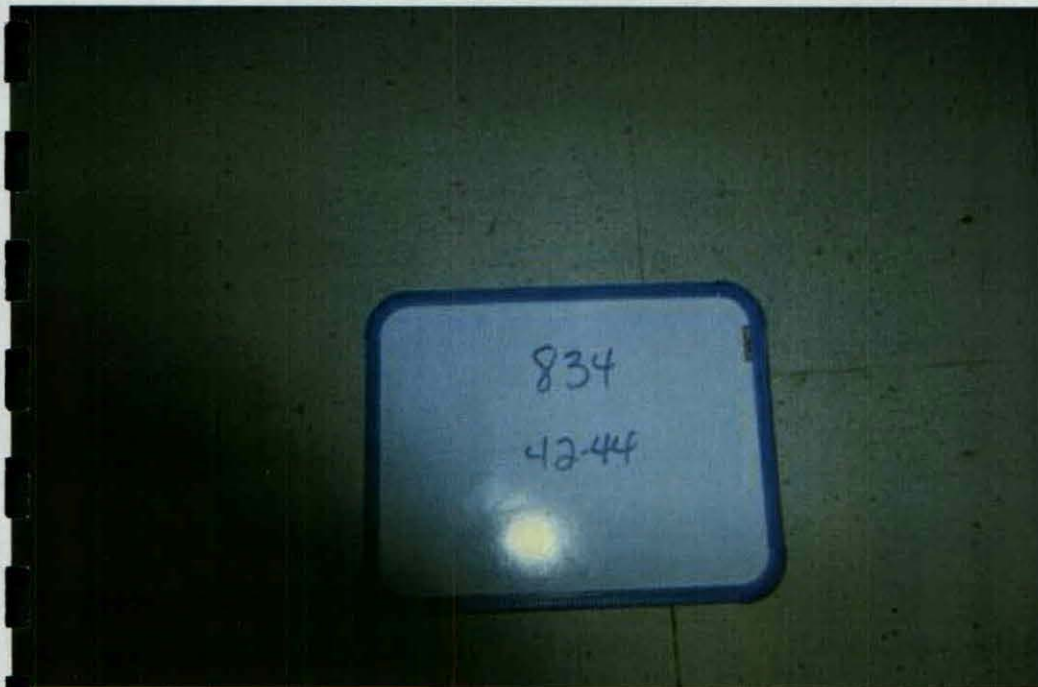


Building 842, Samples 47-49, 12x12 dark gray with white streaks floor tile

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 835, Samples 01-03, 12x12 tan floor tile



Building 834, Sample 42-44, 12x12 off-white floor tile

Fort Sheridan Residential Units, Fort Sheridan, IL

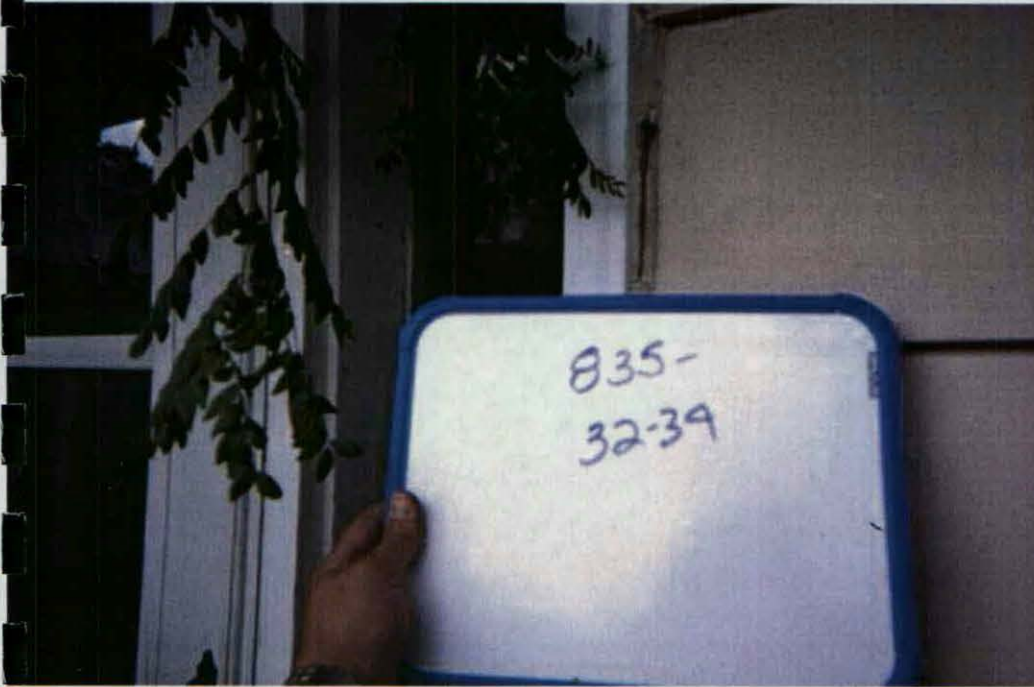


Building 835, Samples 41-43, 12x12 dark tan with white streaks floor tile

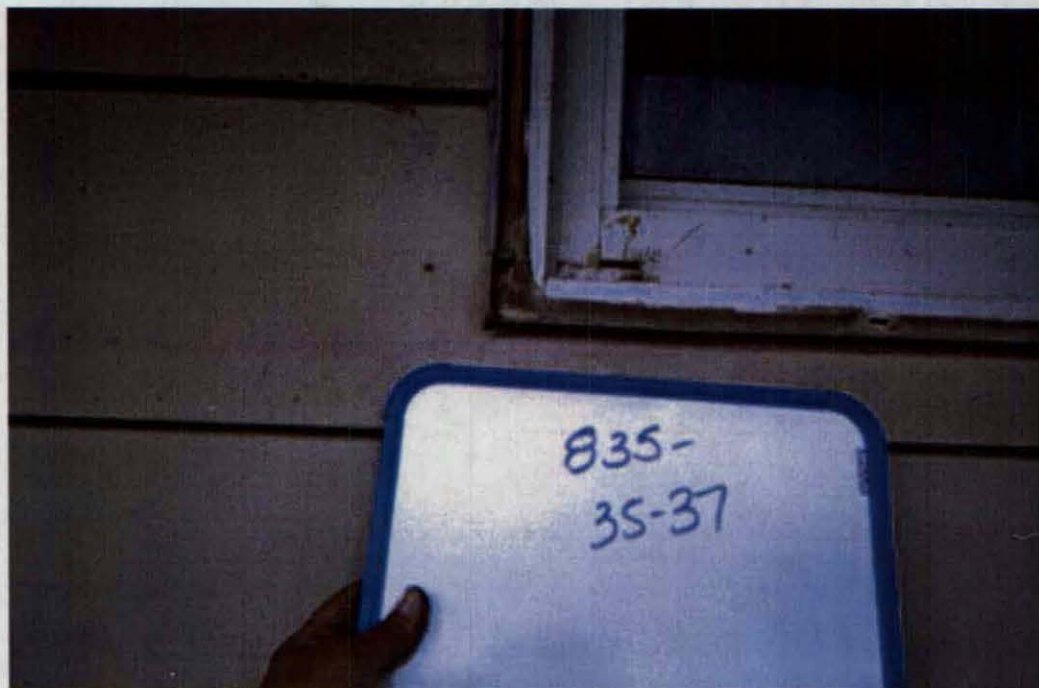


Building 835, Samples 38-40, exterior wall insulation

Fort Sheridan Residential Units, Fort Sheridan, IL

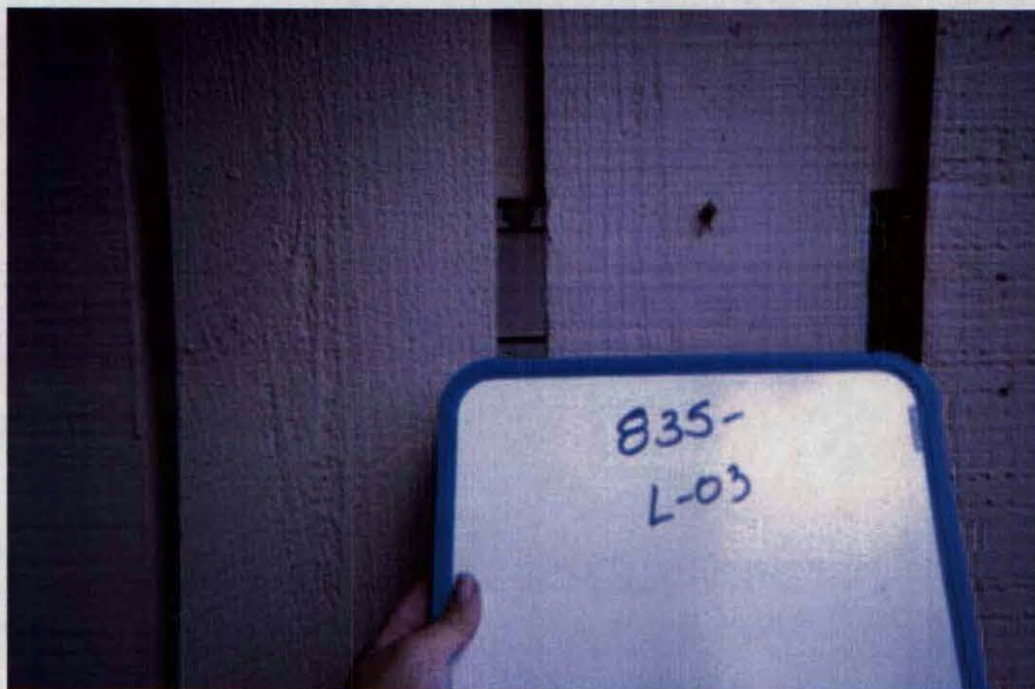


Building 835, Samples 32-34, exterior door caulk

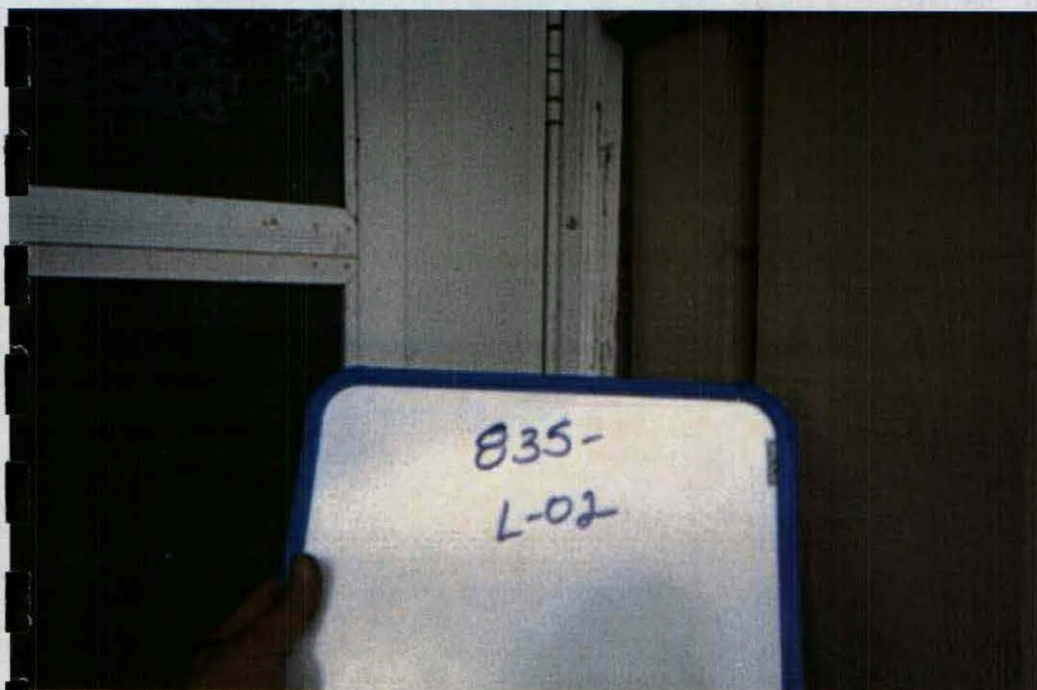


Building 835, Samples 35-37, exterior window caulk

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 835, sample L-03, tan building/fence

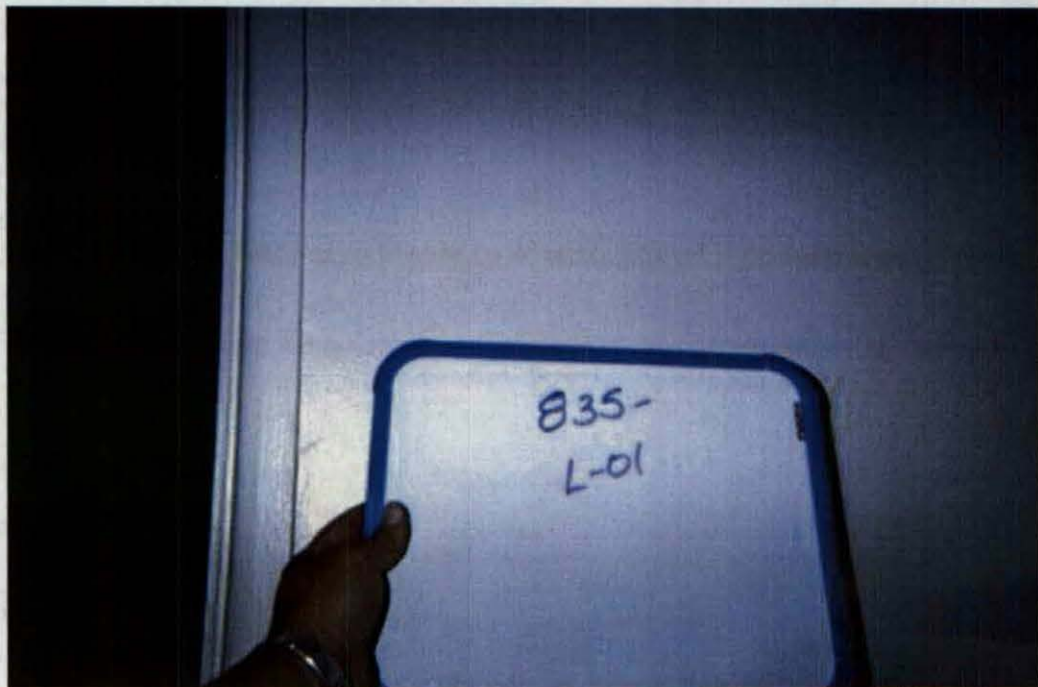


Building 835, Sample L-02, Exterior white trim

Fort Sheridan Residential Units, Fort Sheridan, IL

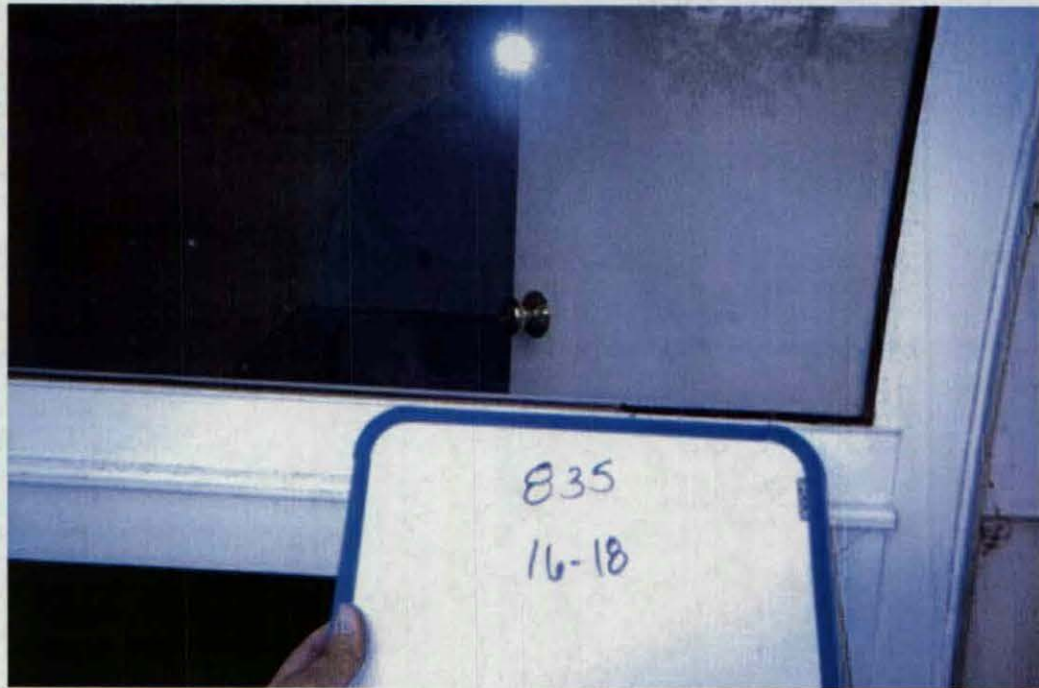


Building 835, Samples 19-21, tub caulk



Building 835, Sample L-01, interior white

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 835, Samples 16-18, interior window gasket



Building 835, Samples 10-12, stair thread

Fort Sheridan Residential Units, Fort Sheridan, IL

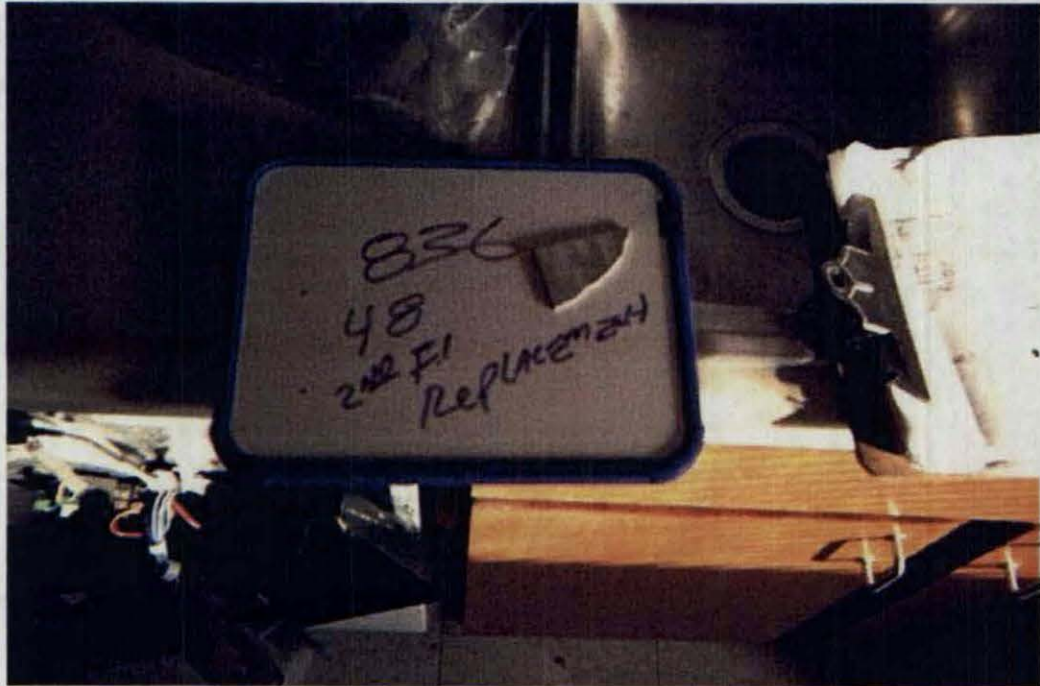


Building 835, Samples 04-06, 12x12 gray floor tile



Building 835, Samples 07-09, vinyl baseboard

Fort Sheridan Residential Units, Fort Sheridan, IL

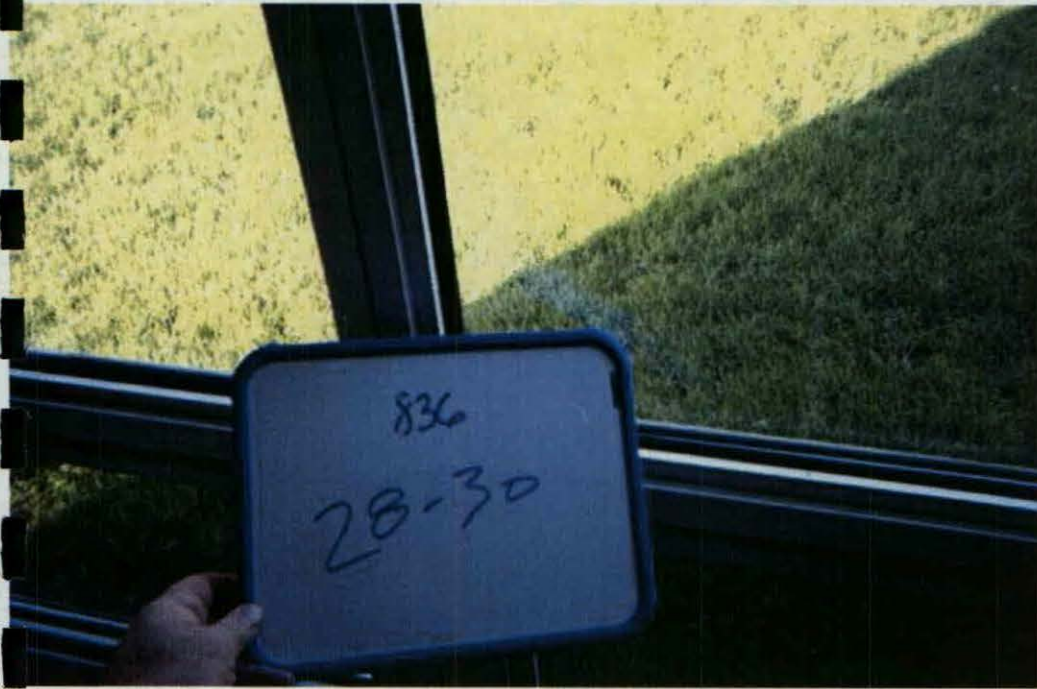


Building 836, Sample 48, 12x12 tan with white streaks replacement tile

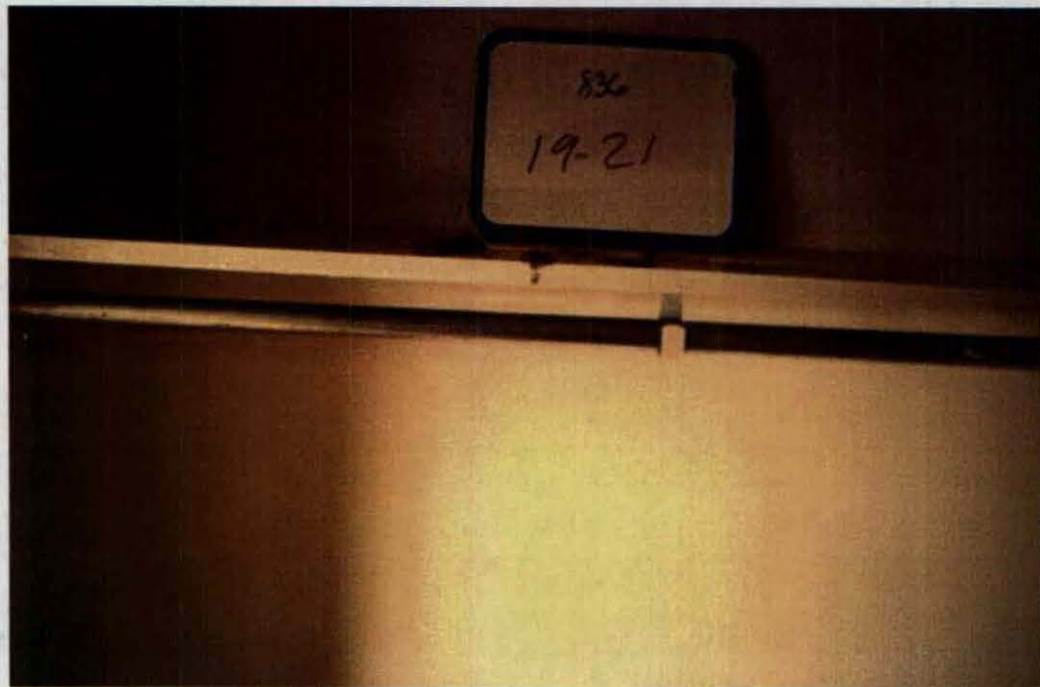


Building 836, Samples 31-32, drywall and fiberboard

Fort Sheridan Residential Units, Fort Sheridan, IL

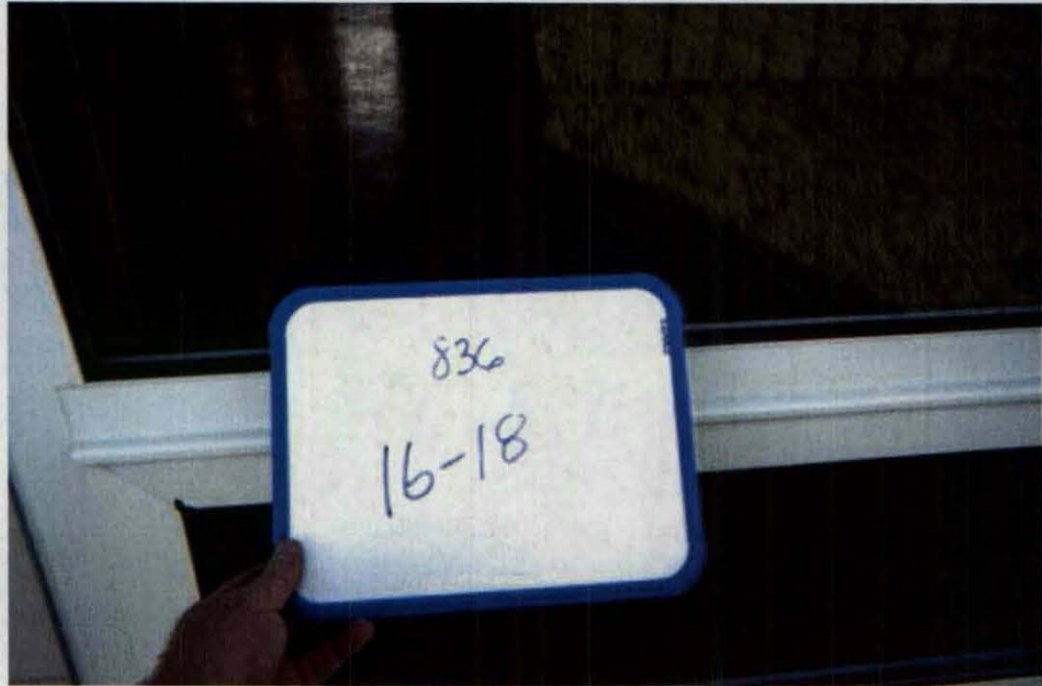


Building 836, Samples 28-30, interior window gasket



Building 836, Samples 19-21, attic insulation

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 836, Samples 16-18, exterior window caulk



Building 836, Samples 07-09, vinyl baseboard

Fort Sheridan Residential Units, Fort Sheridan, IL



building 836, Samples 01-03, 12x12 tan floor tile

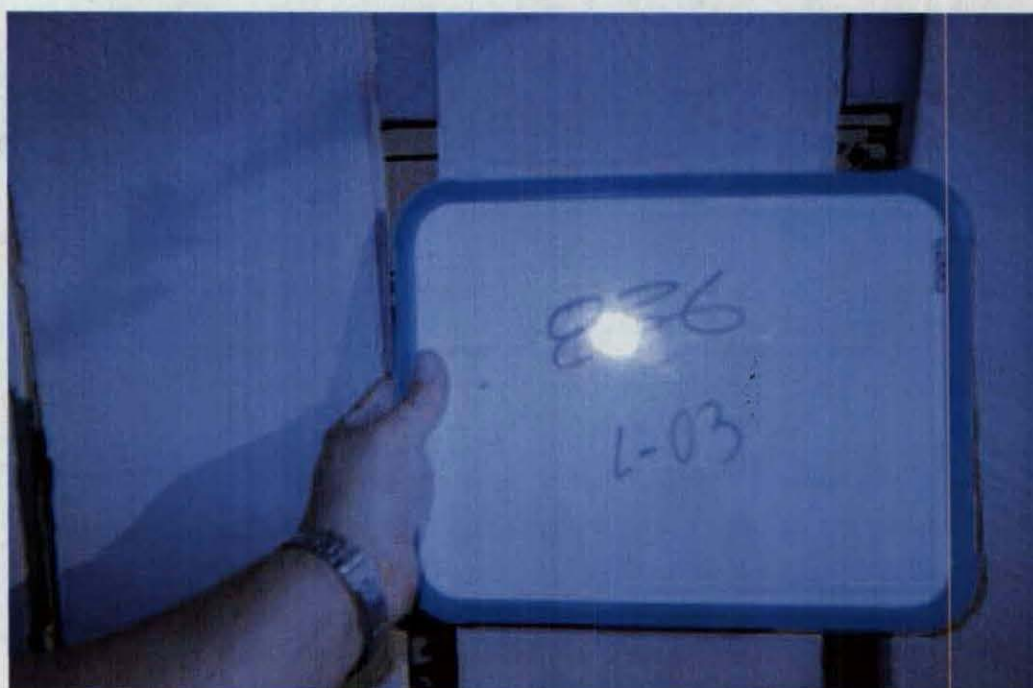


Building 836, Samples 04-06, 12x12 gray floor tile

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 836, Sample L02, exterior white trim



Building 836, Sample L03, interior white

Fort Sheridan - Residential Buildings



Building 837, Sample L-02, exterior white trim



Building 837, Sample L-03, exterior tan fence/building

Fort Sheridan - Residential Buildings

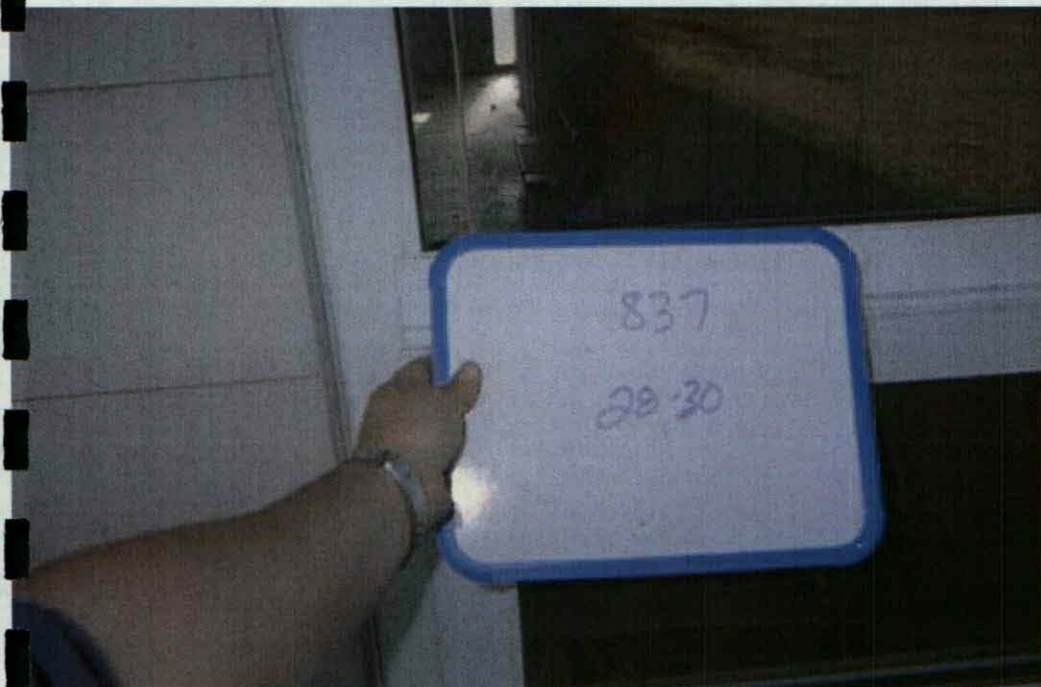


Building 837, Samples 31-33, exterior wall insulation



Building 837, Samples 25-27, exterior door caulk

Fort Sheridan - Residential Buildings

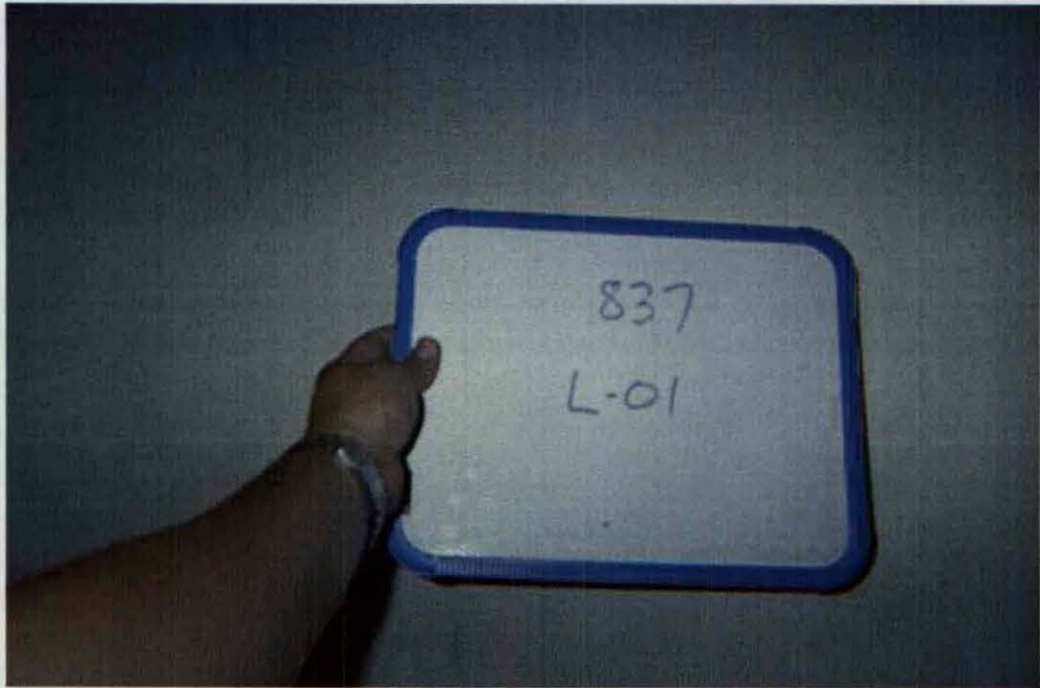


Building 837, Samples 28-30, exterior black window caulk

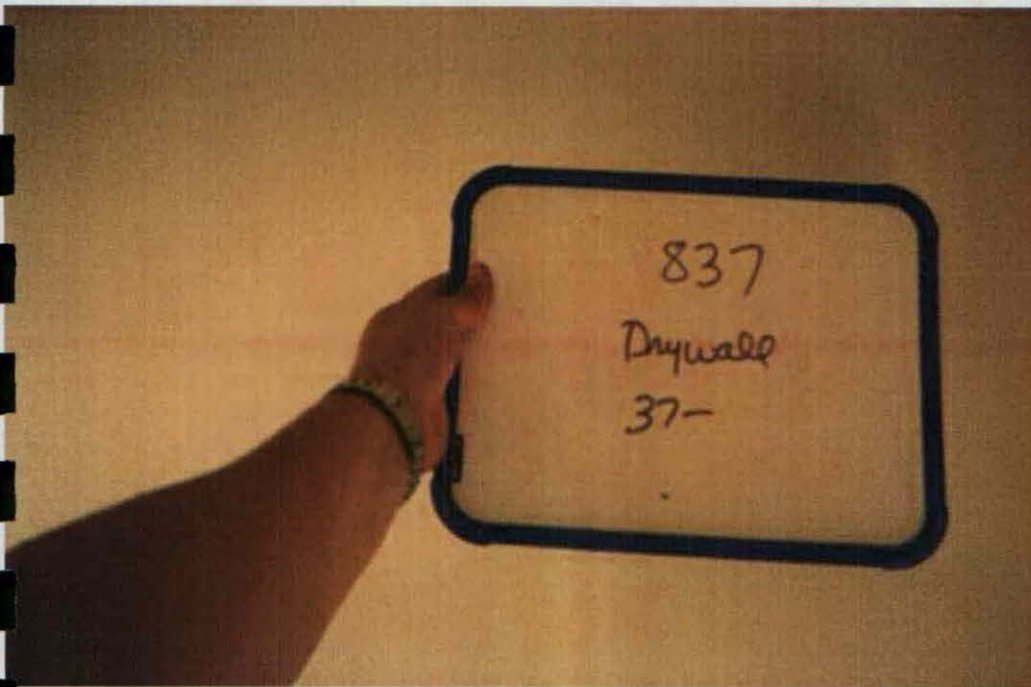


Building 837, samples 22-24, exterior white window caulk

Fort Sheridan - Residential Buildings



Building 837, Sample L-01, interior white

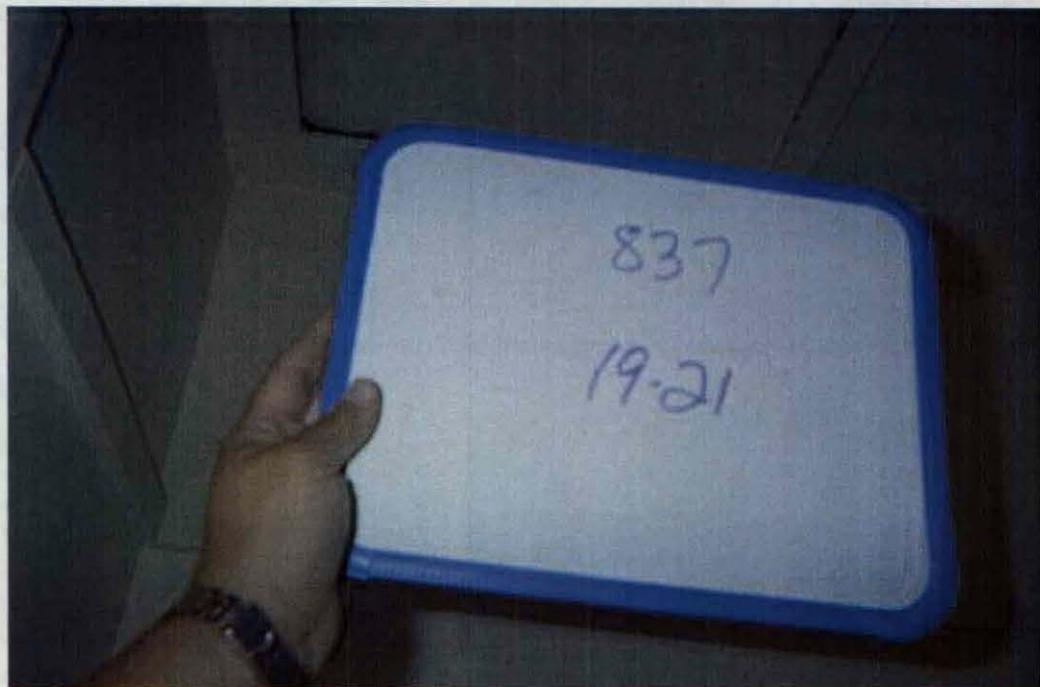


Building 837, drywall

Fort Sheridan - Residential Buildings

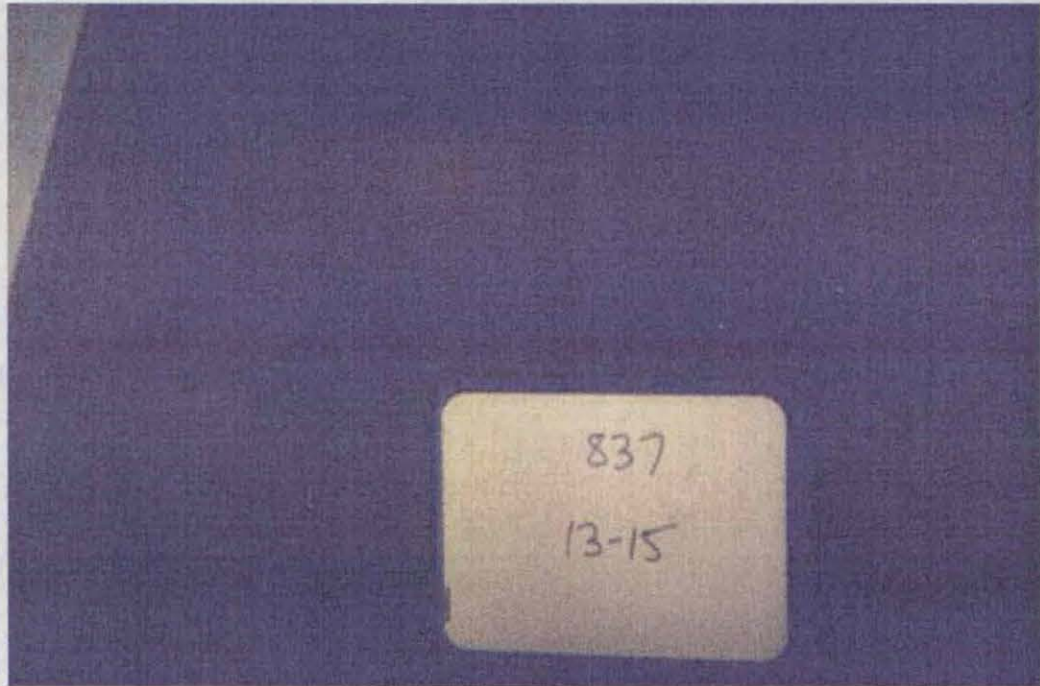


Building 837, Samples 16-18, tub caulk

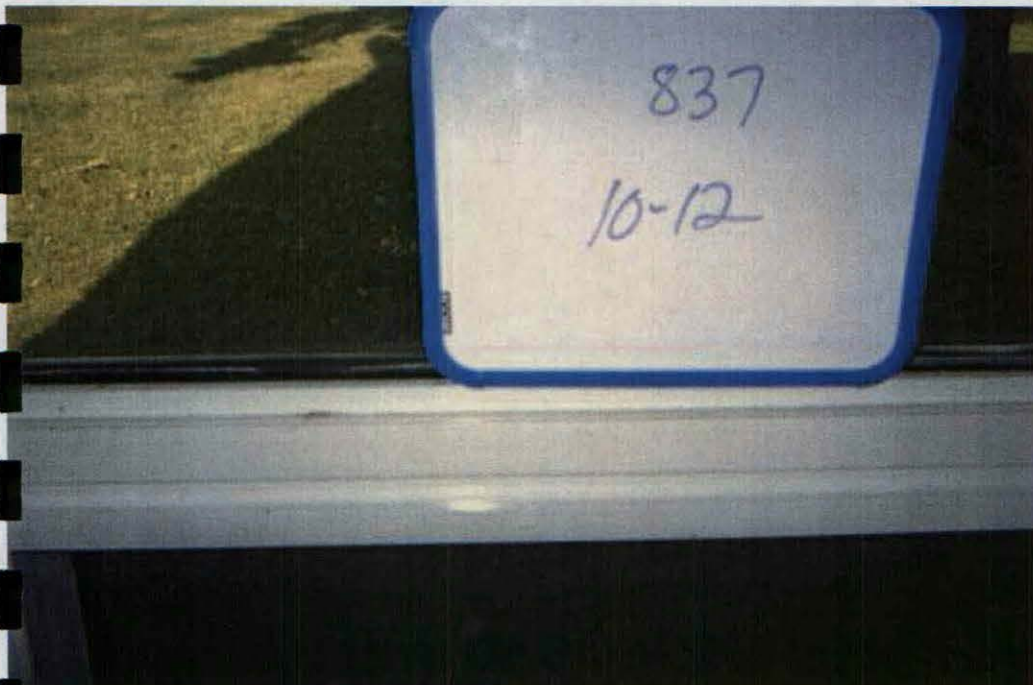


Building 837, Samples 19-21, attic insulation

Fort Sheridan - Residential Buildings



Building 837, Samples 13-15, stair thread



Building 837, Samples 10-12, interior window gasket

Fort Sheridan - Residential Buildings



Building 837, Samples 04-06, 12x12 gray floor tile



Building 837, Samples, 07-09, vinyl baseboard

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 837, Samples 01-03, 12x12 tan floor tile

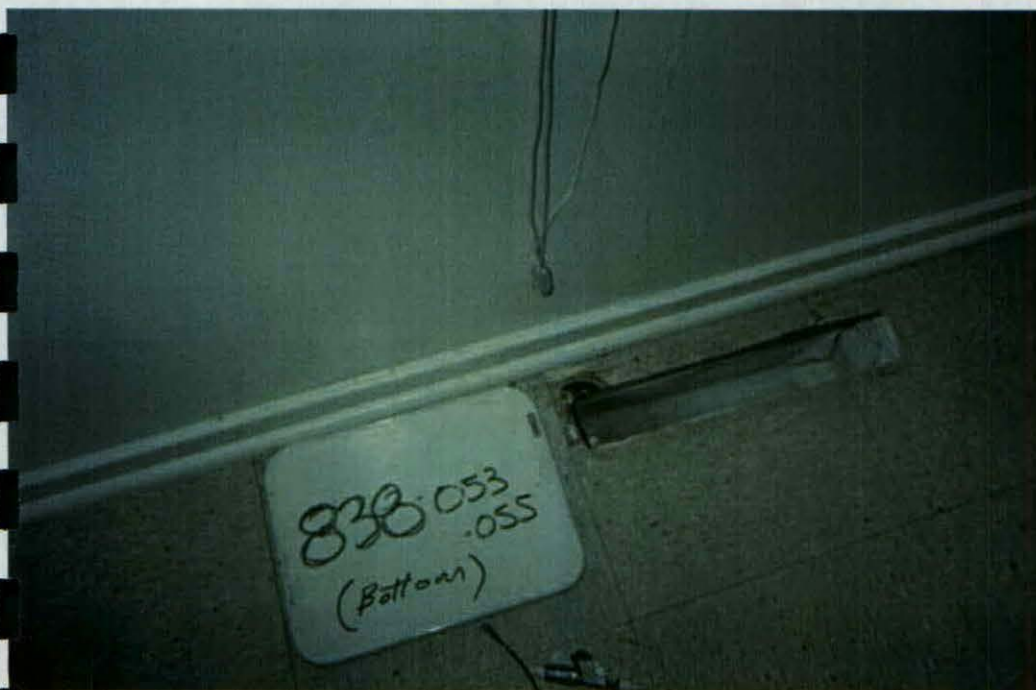


Building 836, Sample 49, 12x12 tan floor tile

Fort Sheridan Residential Units, Fort Sheridan, IL

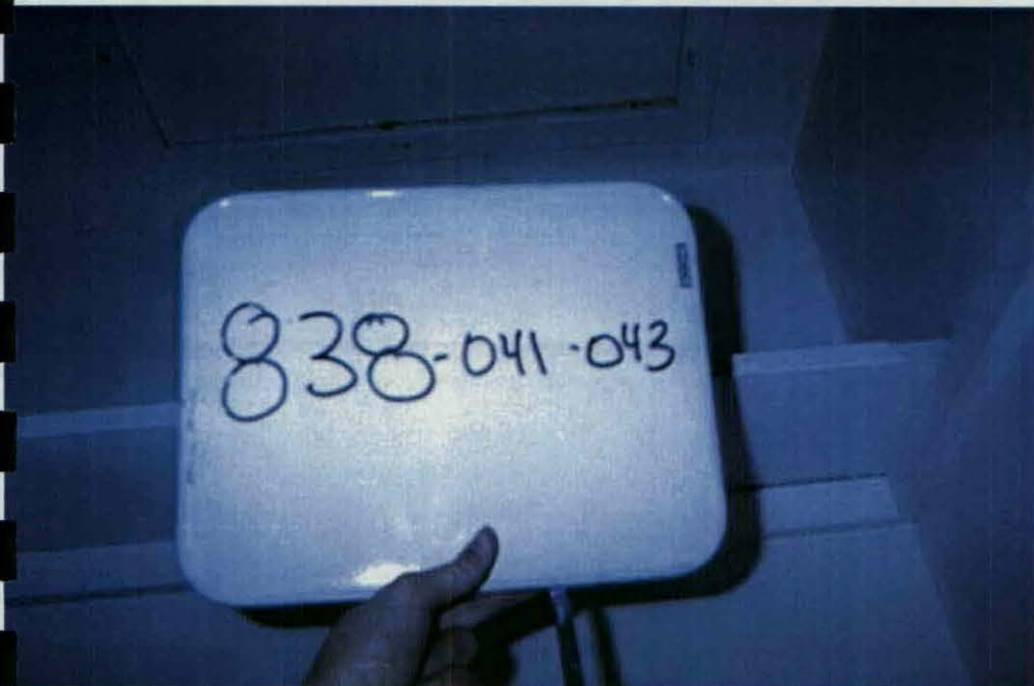


Building 836, Sample L01, building exterior and fence



Building 838, Samples 53-55, beige floor tile

Fort Sheridan Residential Units, Fort Sheridan, IL

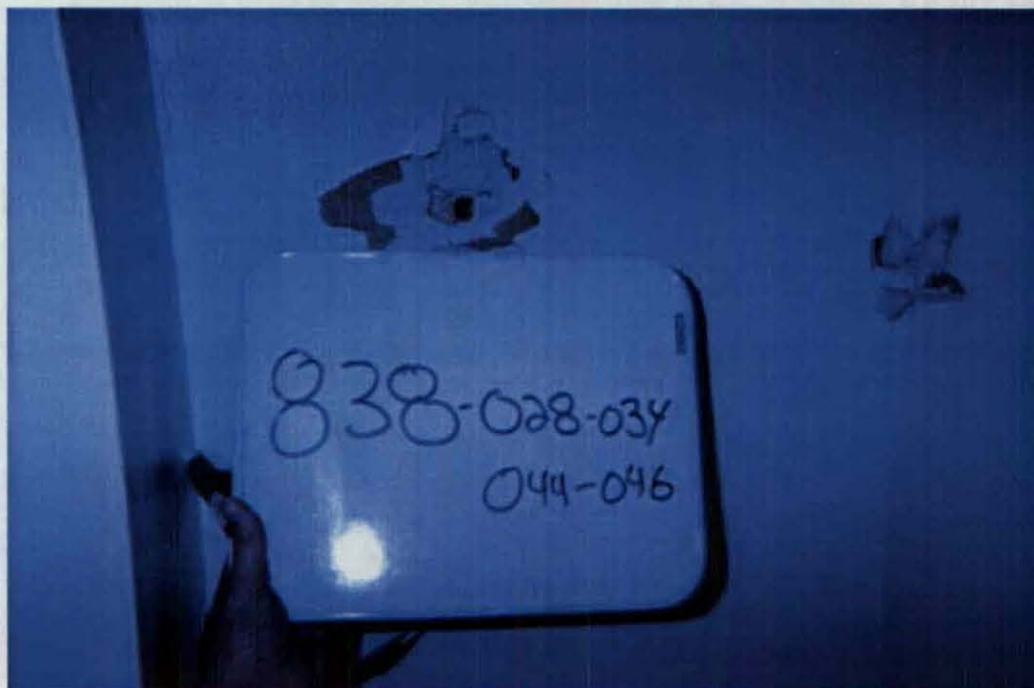


Building 838, Samples 41-43, attic insulation



Building 838, Samples 50-51, 12x12 brown spotty floor tile

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 838, Samples 28-34, 44-46, drywall and fiberboard

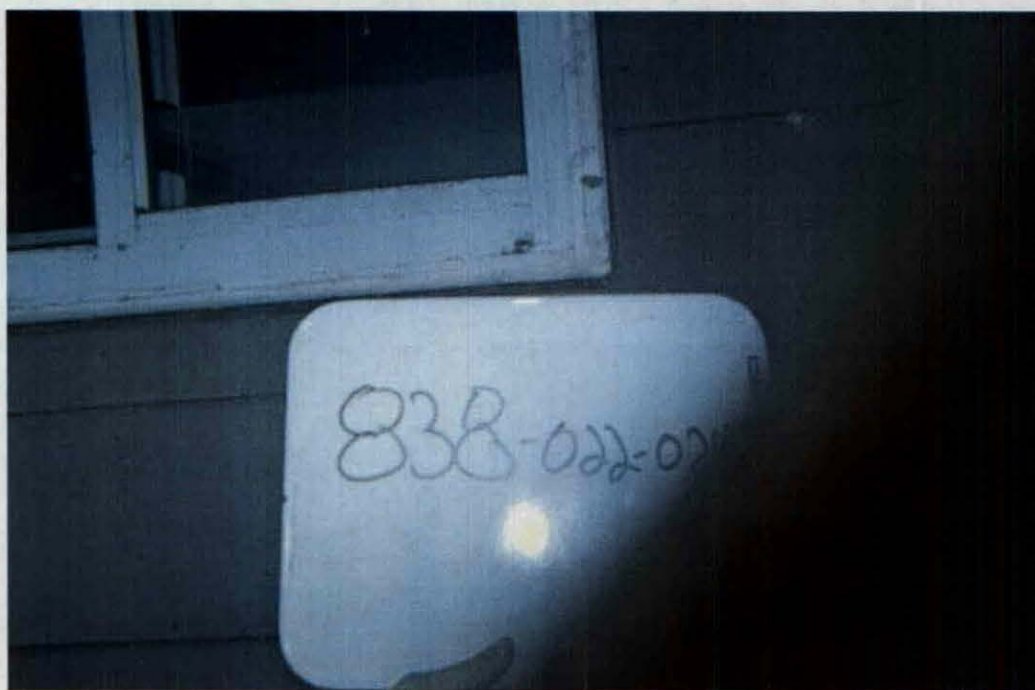


Building 838, Samples 25-27, exterior door caulk

Fort Sheridan Residential Units, Fort Sheridan, IL

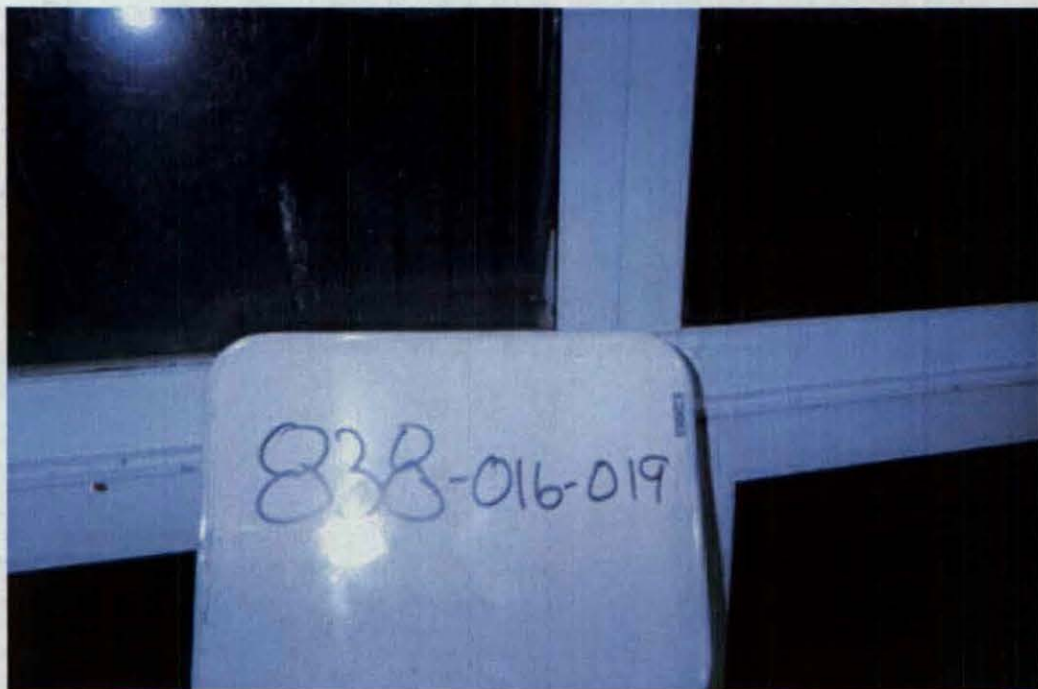


Building 838, Samples 19-21, interior window gasket



Building 836, Samples 22-24, exterior window caulk

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 838, Samples 16-18, exterior window caulk



Building 838, Samples 13-15, stair tread

Fort Sheridan Residential Units, Fort Sheridan, IL

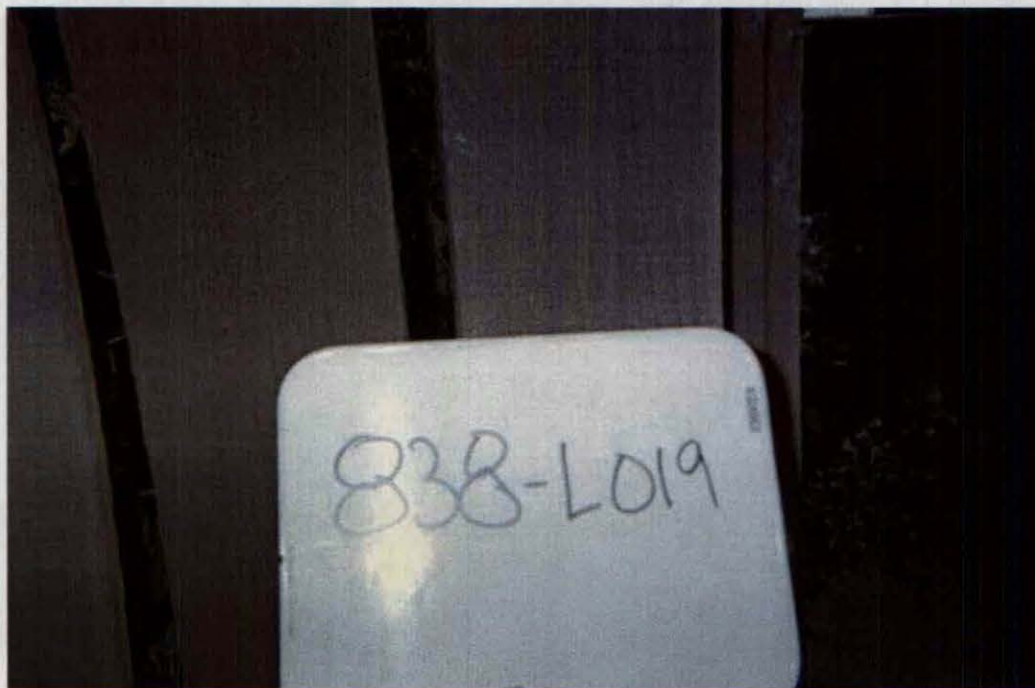


Building 838, Samples 01-03, 04-06, 12x12 tan floor tile and baseboard

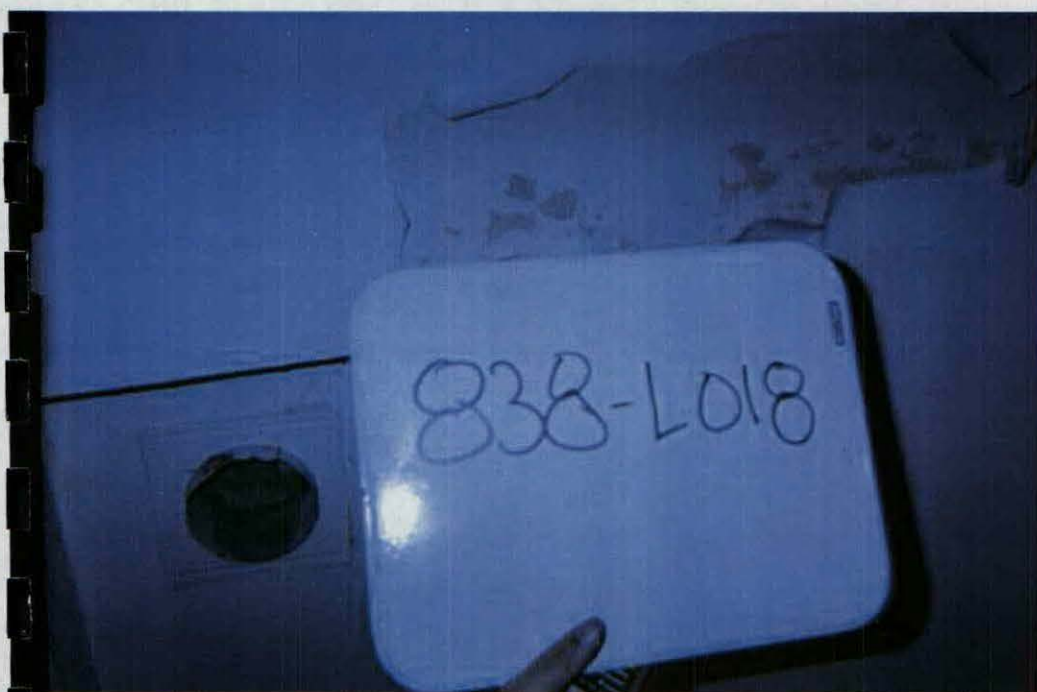


Building 838, Samples 07-09, 10-12, 12x12 gray and green floor tile

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 838, Sample L19, maroon fencing



Building 838, Sample L18, interior white

Fort Sheridan Residential Units, Fort Sheridan, IL

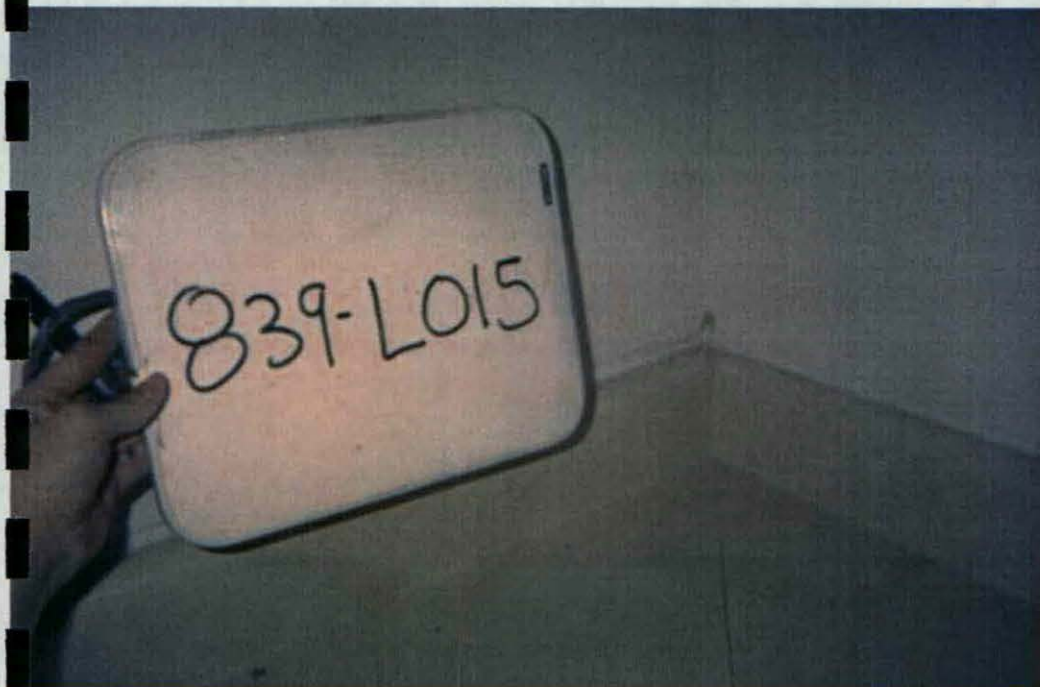


Building 839, Samples 26-28, exterior door caulk



Building 839, Sample L-017, exterior white trim

Fort Sheridan Residential Units, Fort Sheridan, IL

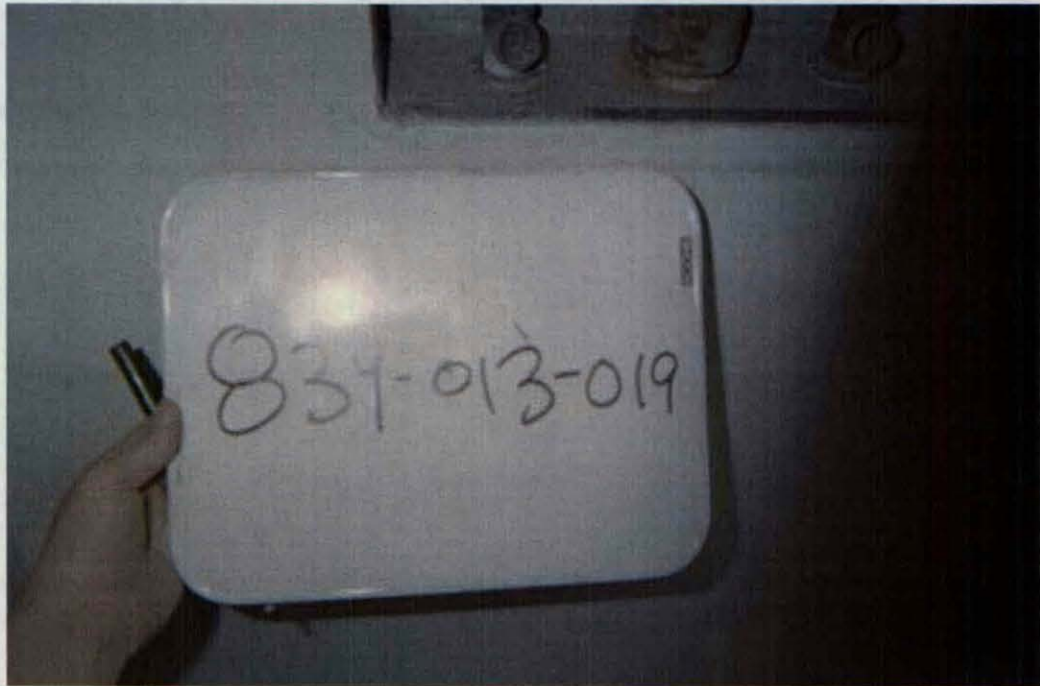


Building L-015, interior white

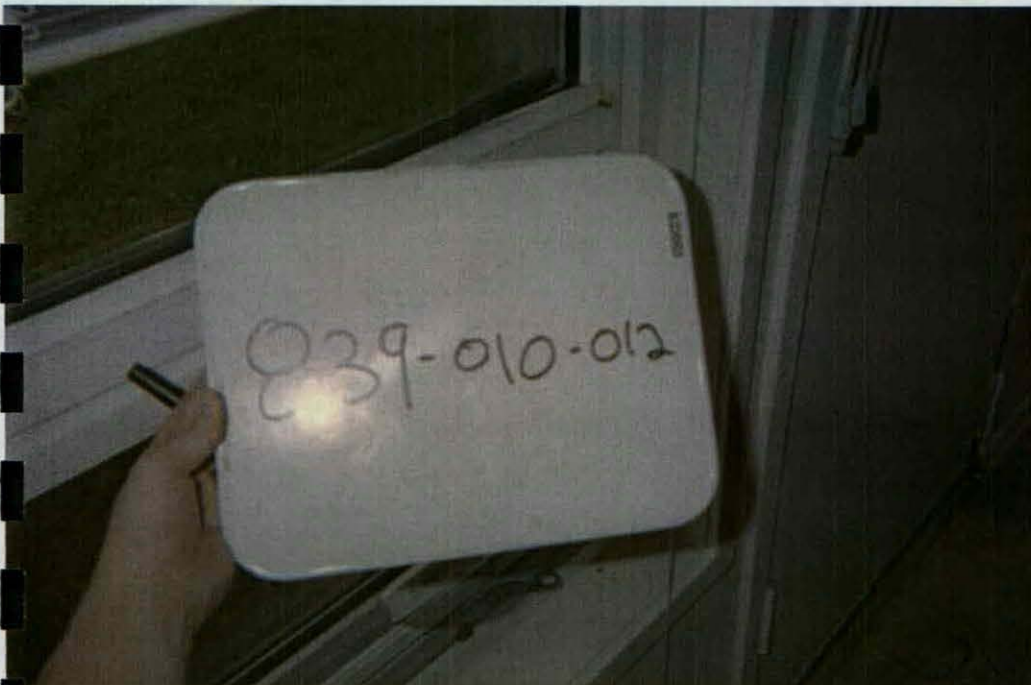


Building 839, Sample L-016, tan fence

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 839, Samples 13-19, drywall

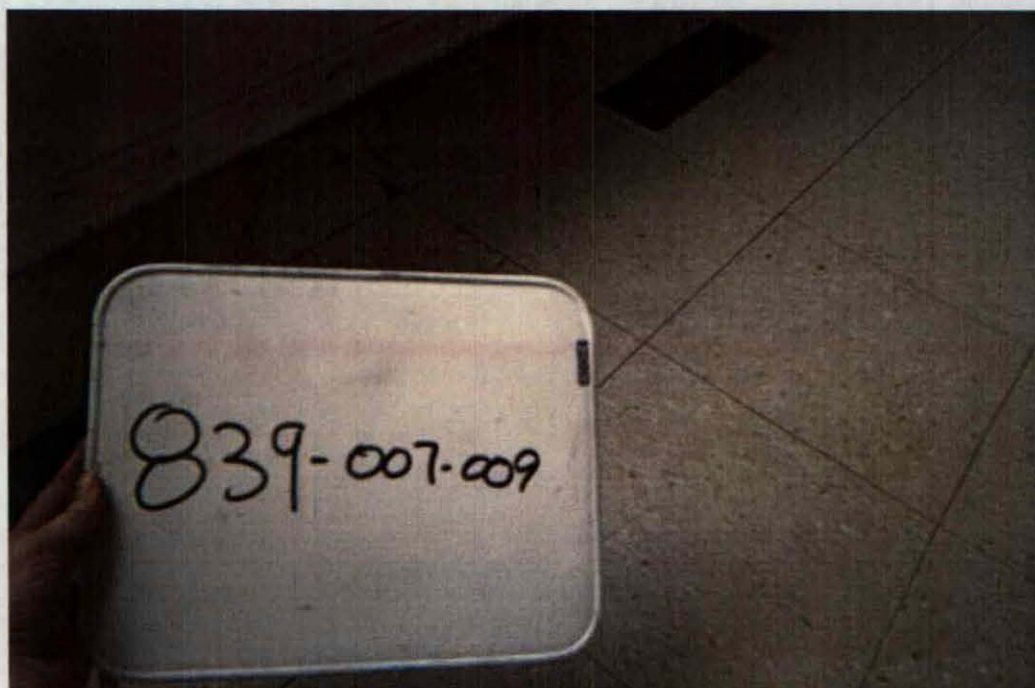


Building 839, Samples 10-12, interior window gasket

Fort Sheridan Residential Units, Fort Sheridan, IL

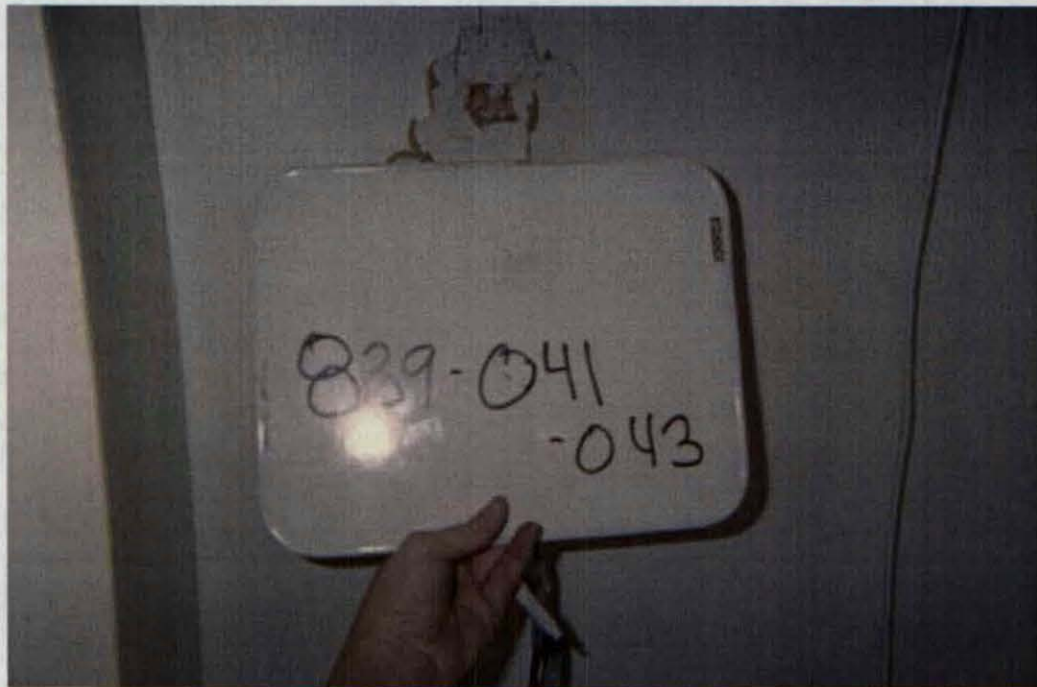


Building 839, Samples 01-06, 12x12 tan floor tile and baseboard

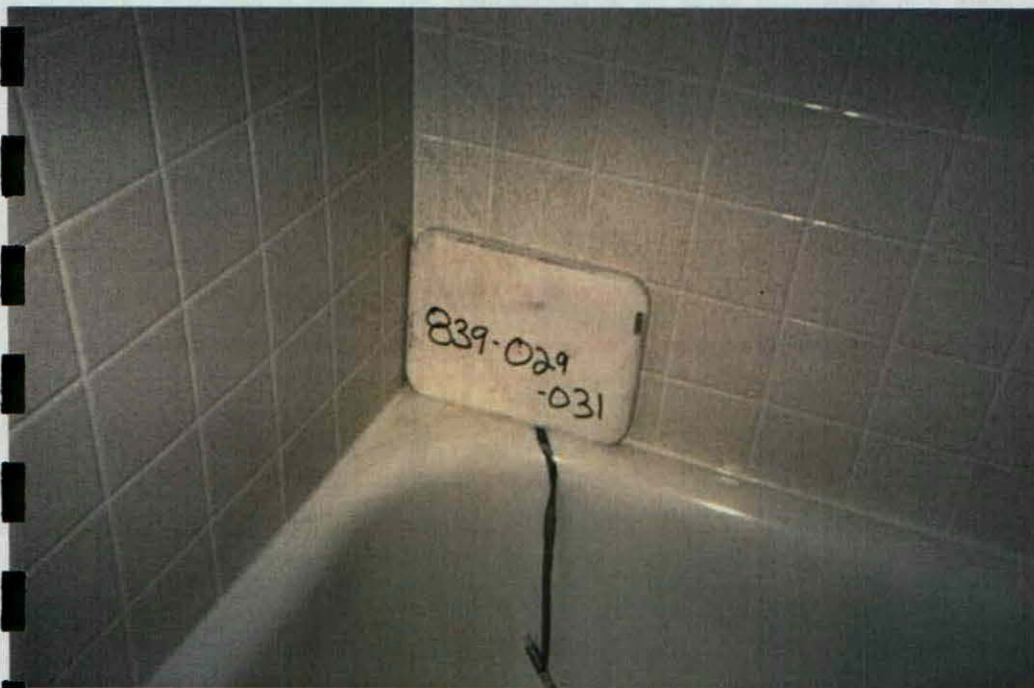


Building 839, Samples 07-09, 12x12 gray floor tile

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 839, Samples 41-43, fiberboard below drywall

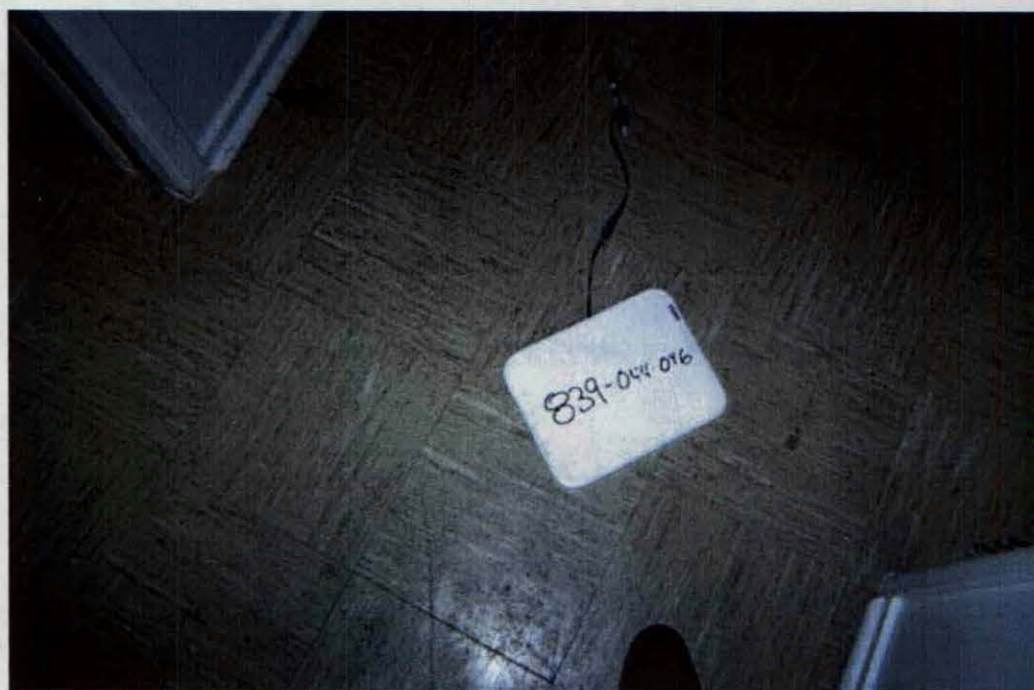


Building 839, Samples 29-31, tub caulk

Fort Sheridan Residential Units, Fort Sheridan, IL

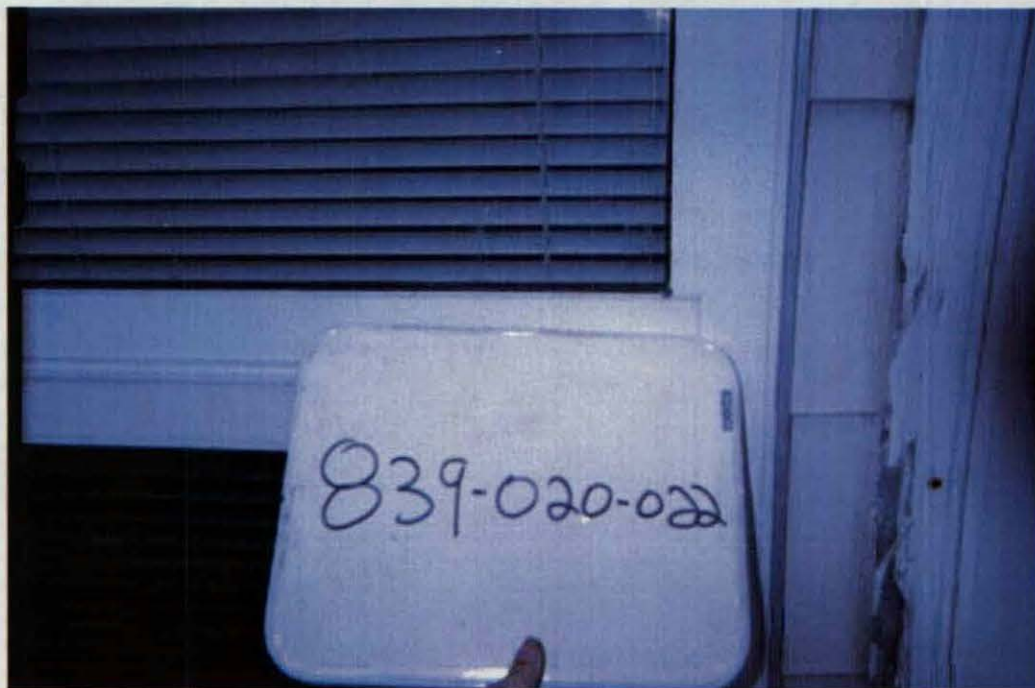


Building 839, Samples 35-37, stair treads

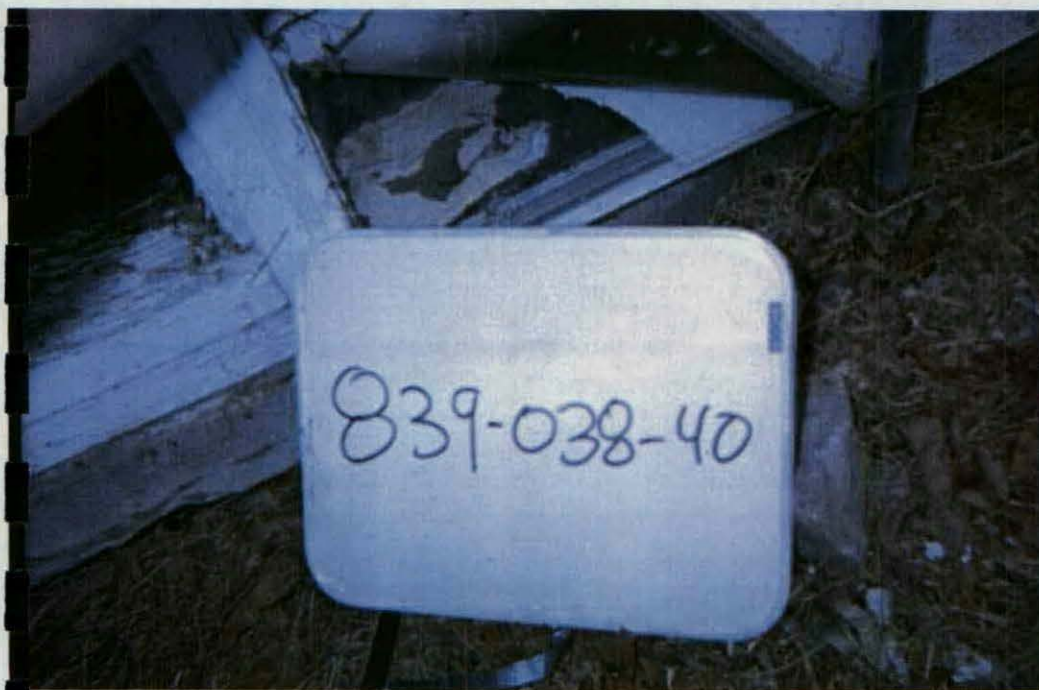


Building 839, Samples 44-46, 12x12 brown floor tile

Fort Sheridan Residential Units, Fort Sheridan, IL

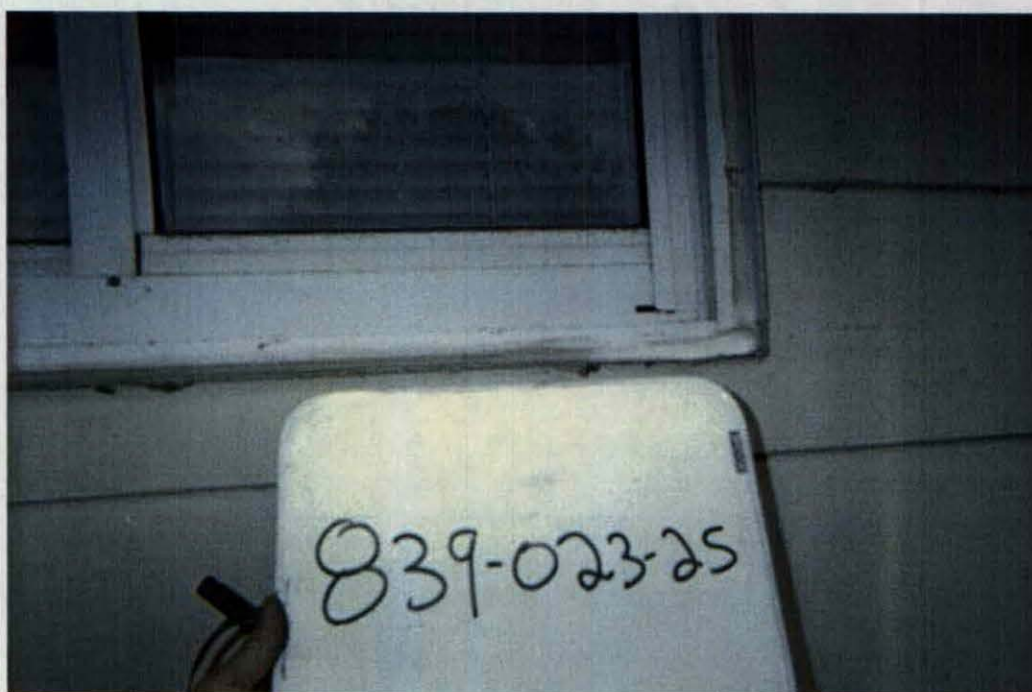


Building 839, Samples 20-22, exterior black window caulk



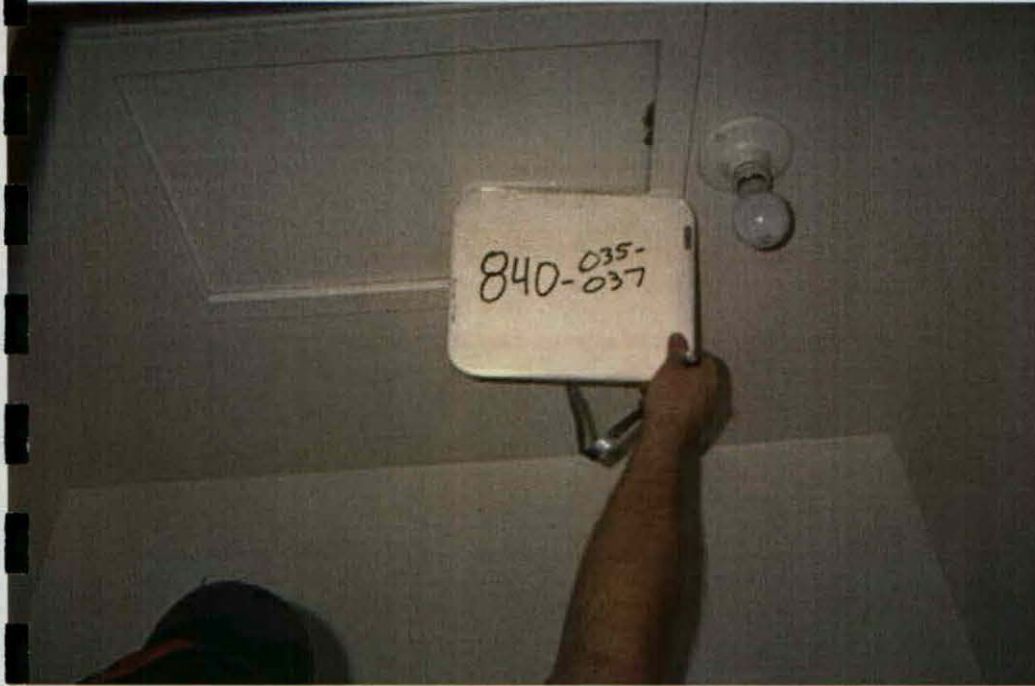
Building 839, Samples, 38-40, exterior wallboard insulation

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 839, Samples 23-25, exterior window caulk

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 840, Samples 35-37, attic insulation



Building 839, Samples 32-34, attic insulation

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 840, Samples 32-34, tub caulk

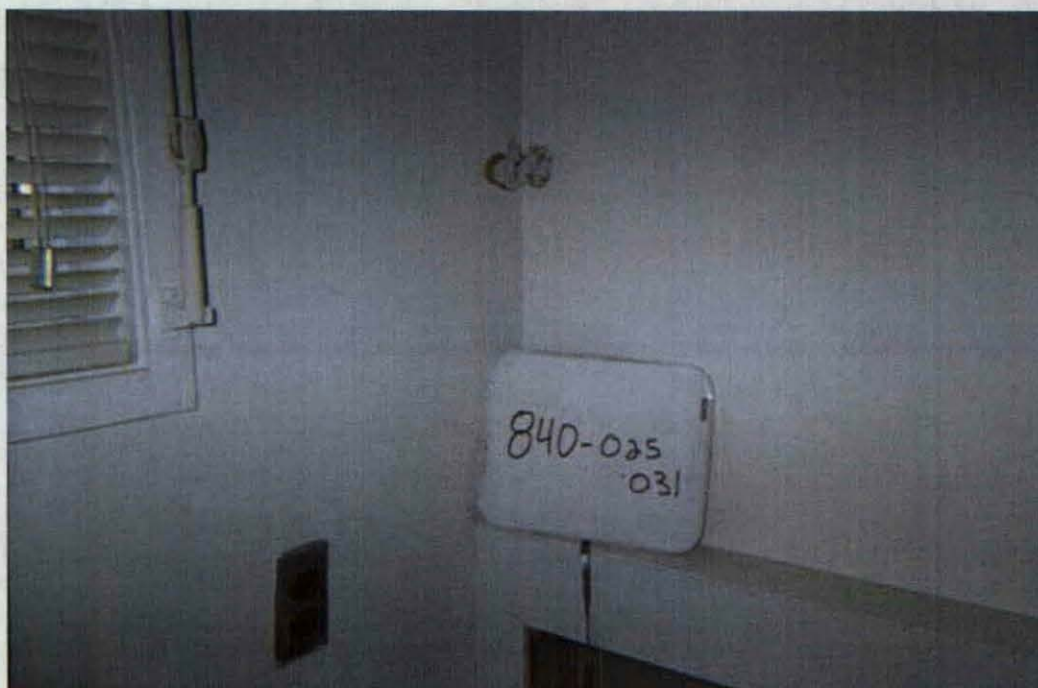


Building 840, Samples 38-40, fiberboard beneath drywall

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 840, Sample L-014, exterior white trim



Building 840, Samples 25-31, drywall

Fort Sheridan Residential Units, Fort Sheridan, IL

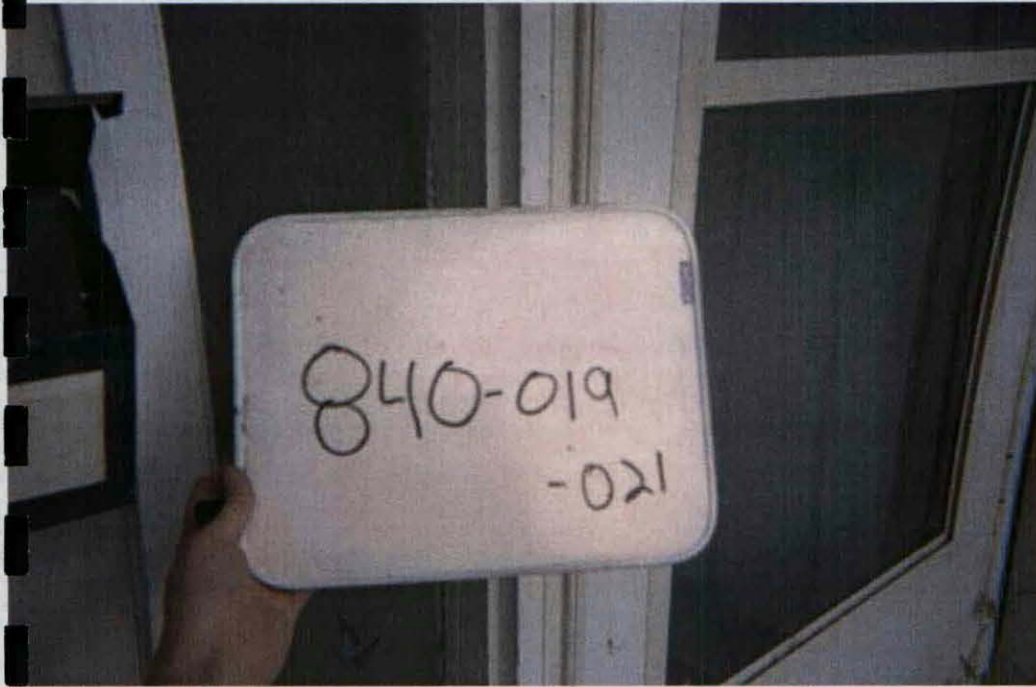


Building 840, Sample L-013, tan fence

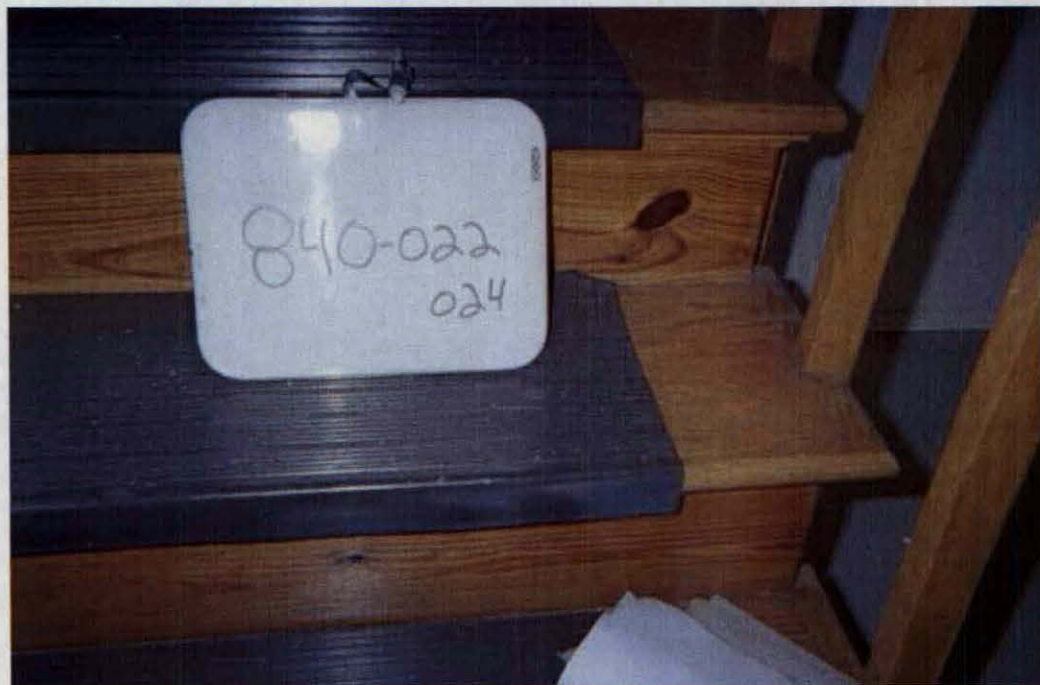


Building 840, Sample L-012, interior white

Fort Sheridan Residential Units, Fort Sheridan, IL

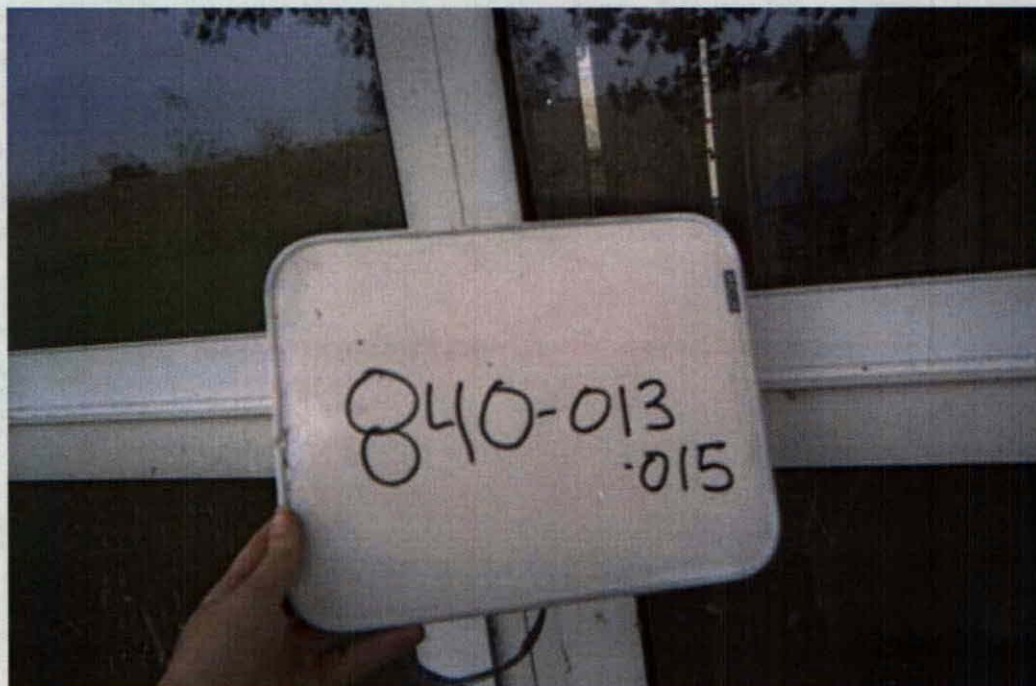


Building 840, Samples 19-21, exterior white window caulk

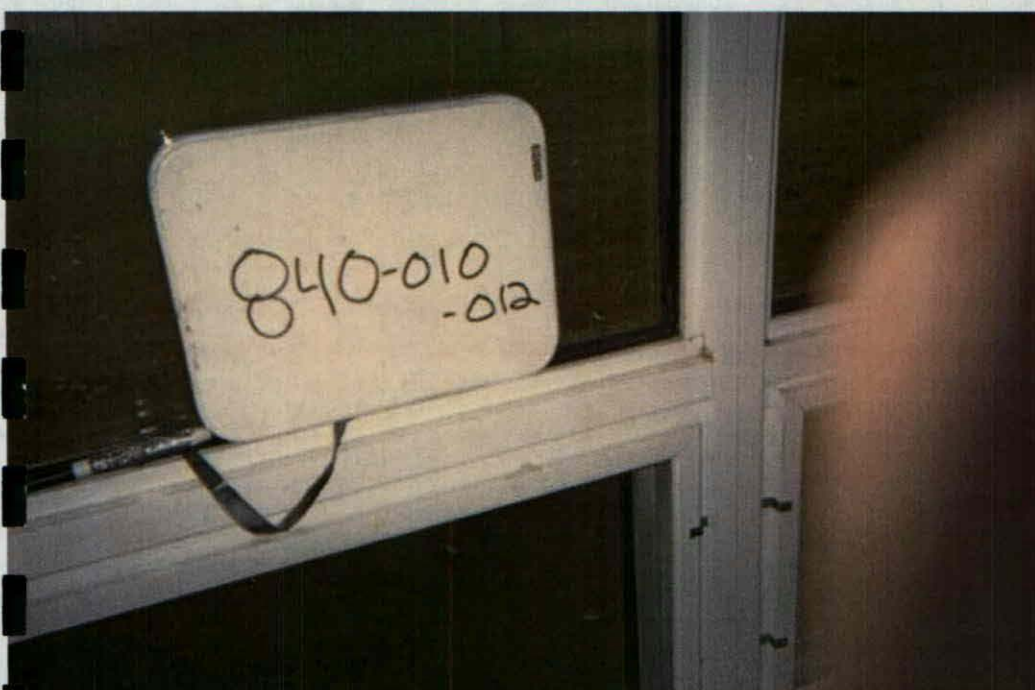


Building 840, Samples 22-24, stair thread

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 840, Samples 13-15, exterior black window caulk



Building 840, Samples 10-12, interior window gasket

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 840, Samples 01-06, 12x12 tan floor tile and vinyl baseboard



Building 840, Samples 07-09, 12x12 gray floor tile

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 840, Sample L-011 exterior white trim

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 841, Samples 017-019, interior window gasket



Building 841, Samples 004-006, 12x12 gray floor tile and mastic

Fort Sheridan Residential Units, Fort Sheridan, IL



Roofing materials

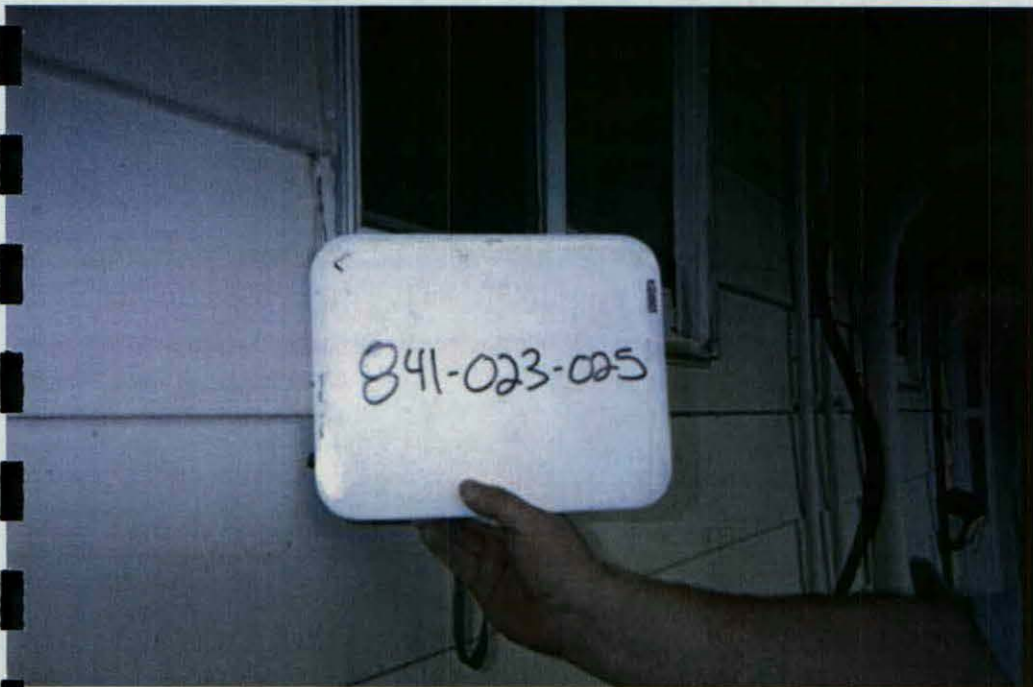


Buildig 841, Samples 001-003, 007,009, 12x12 tan floor tile and mastic, vinyl baseboard

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 841, Samples 20-22, exterior window caulk

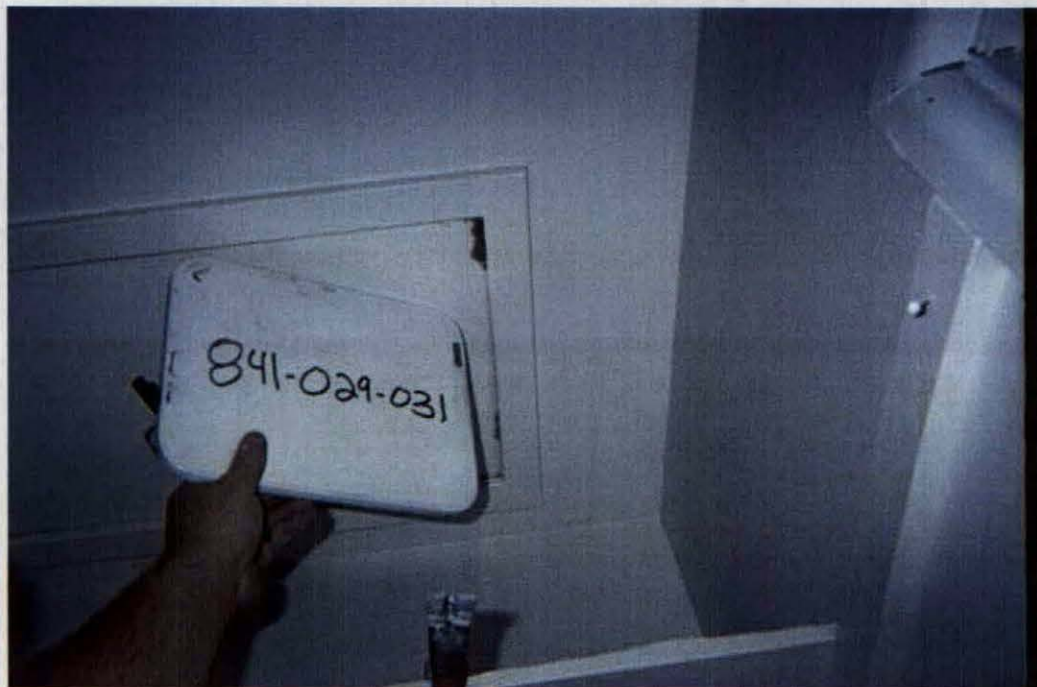


Building 841, Samples 23-25, exterior white window caulk

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 841, Samples 26-28, exterior door caulk



Building 841, Samples 29-31, attic insulation

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 841, Sample L010, tan fence

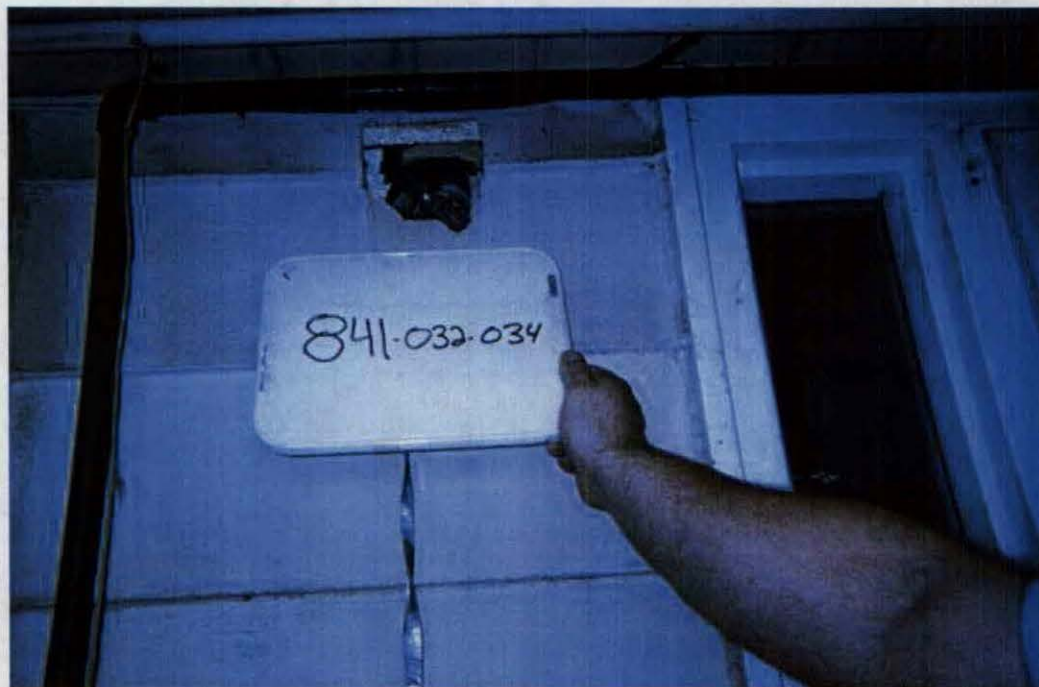


Building 841, Sample L009, interior white

Fort Sheridan Residential Units, Fort Sheridan, IL

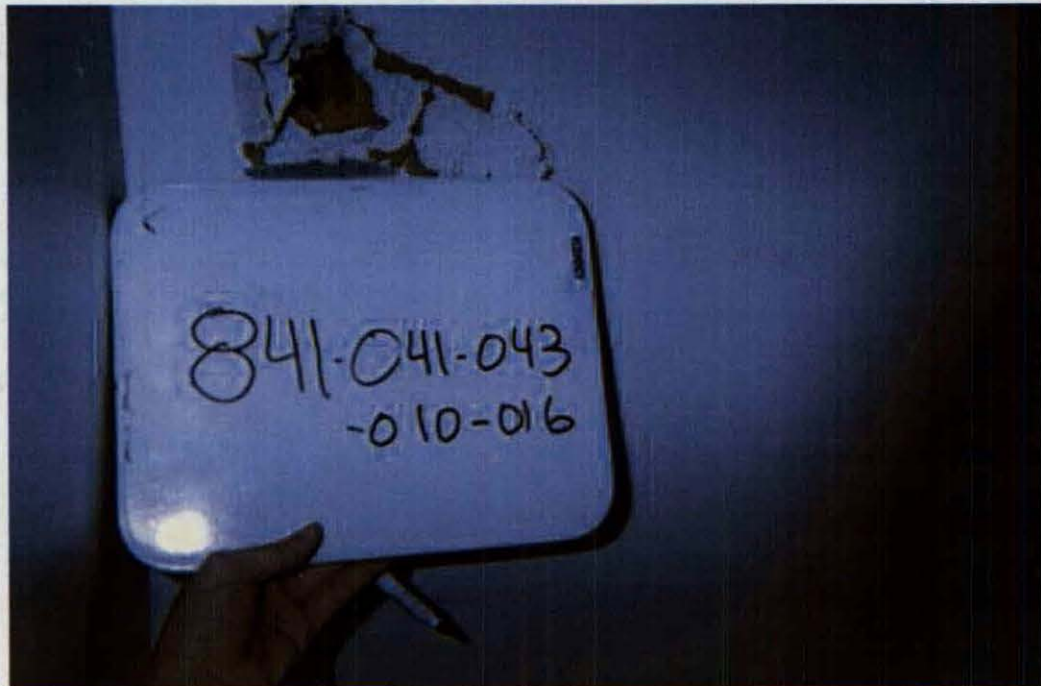


Building 841, Sample 35-37, stair tread

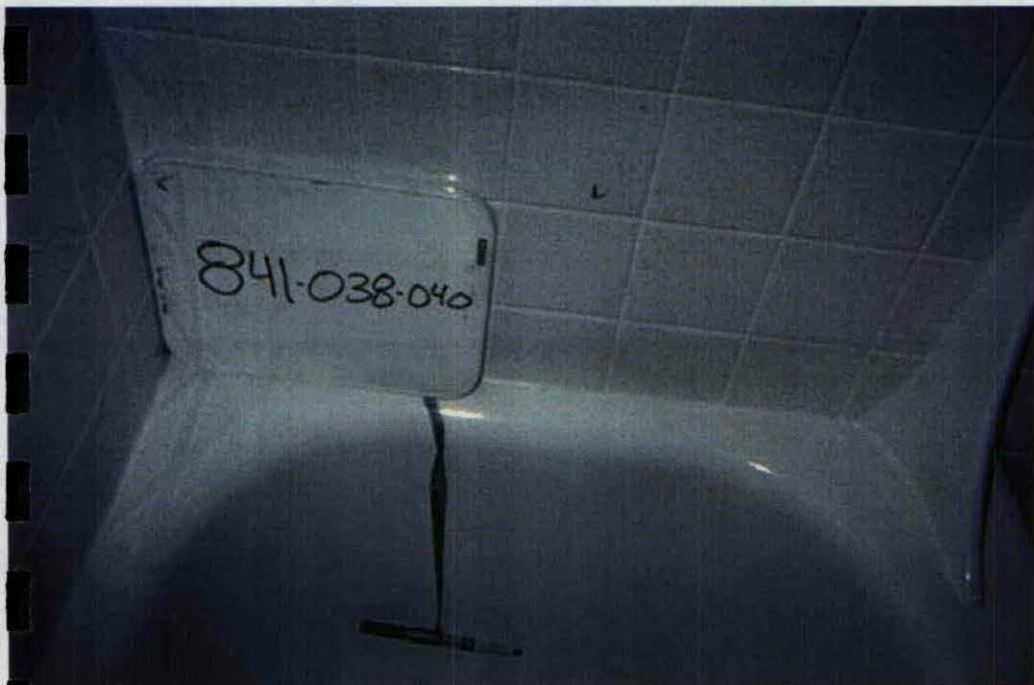


Building 841, Sample 32-34, exterior wallboard

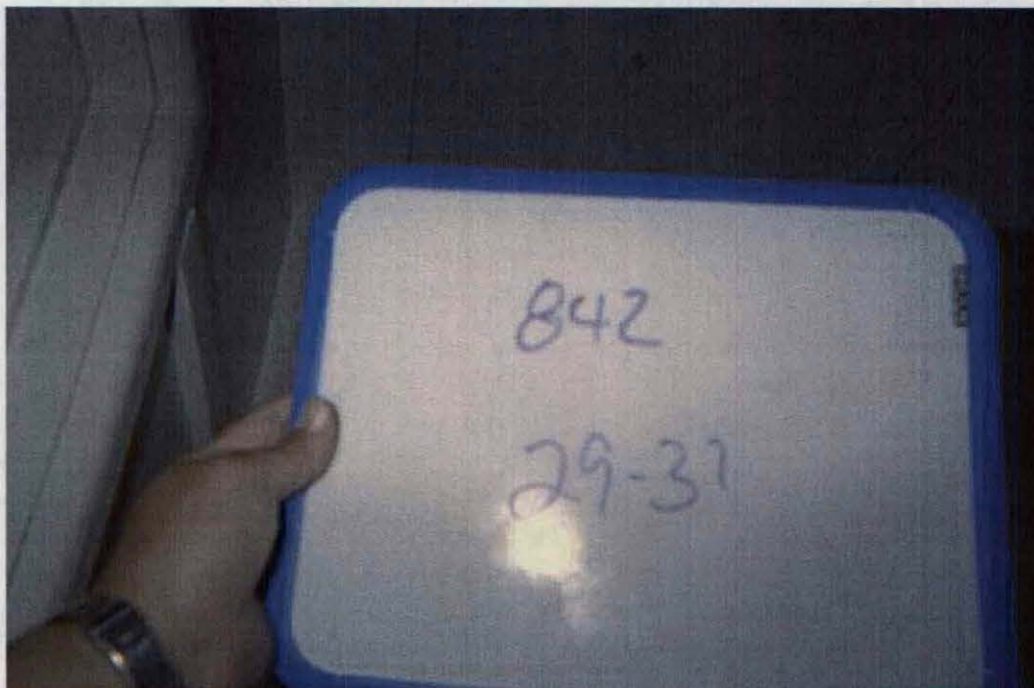
Fort Sheridan Residential Units, Fort Sheridan, IL



Building 841, Sample 41-43, 10-16, drywall and fiberboard



Building 841, Samples 38-40, bath tub caulk



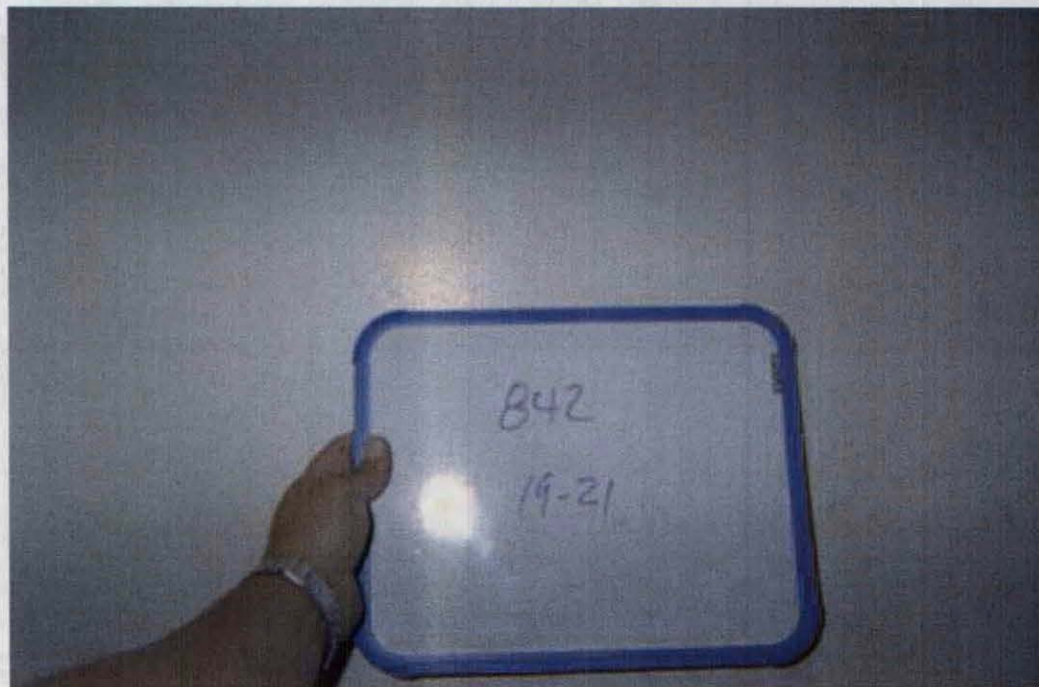
Building 842, Samples 29-31, attic insulation



Building 842, Samples 26-28, tub caulk



Building 842, Samples 16-18, stair thread



Building 842, Samples 19-21, drywall



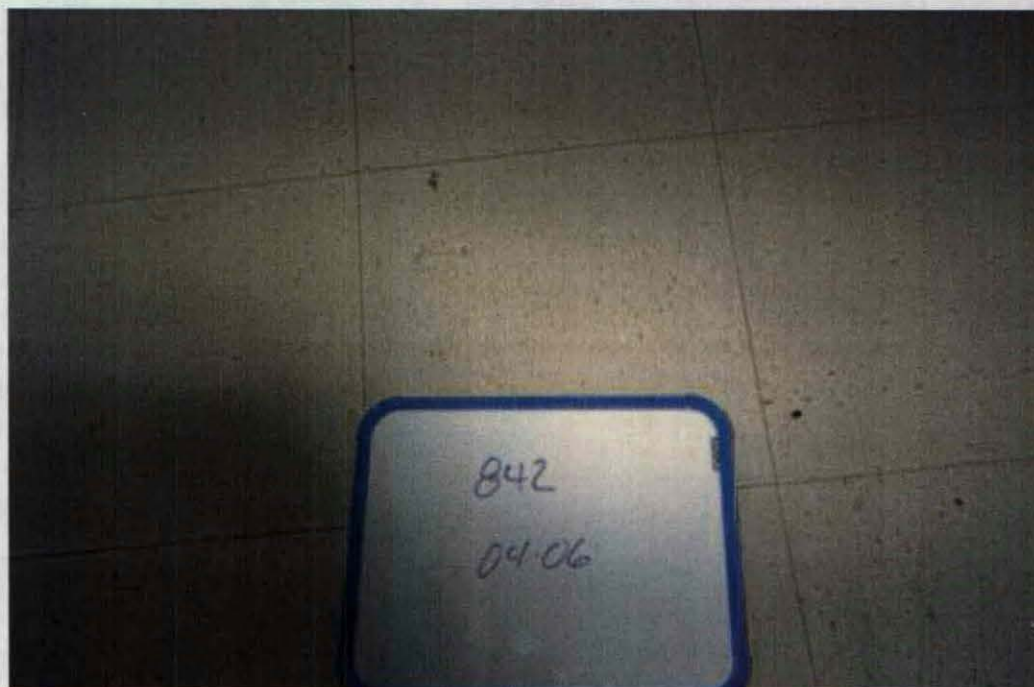
Building 842, Samples 10-12, interior window gasket



Building 842, Samples 07-09, vinyl baseboard



Building 842, Samples 01-03, 12x12 tan floor tile



Building 842, Samples 04-06, 12x12 off-white with tan specks floor tile



Building 842, sample 51, 9x9 white replacement tile



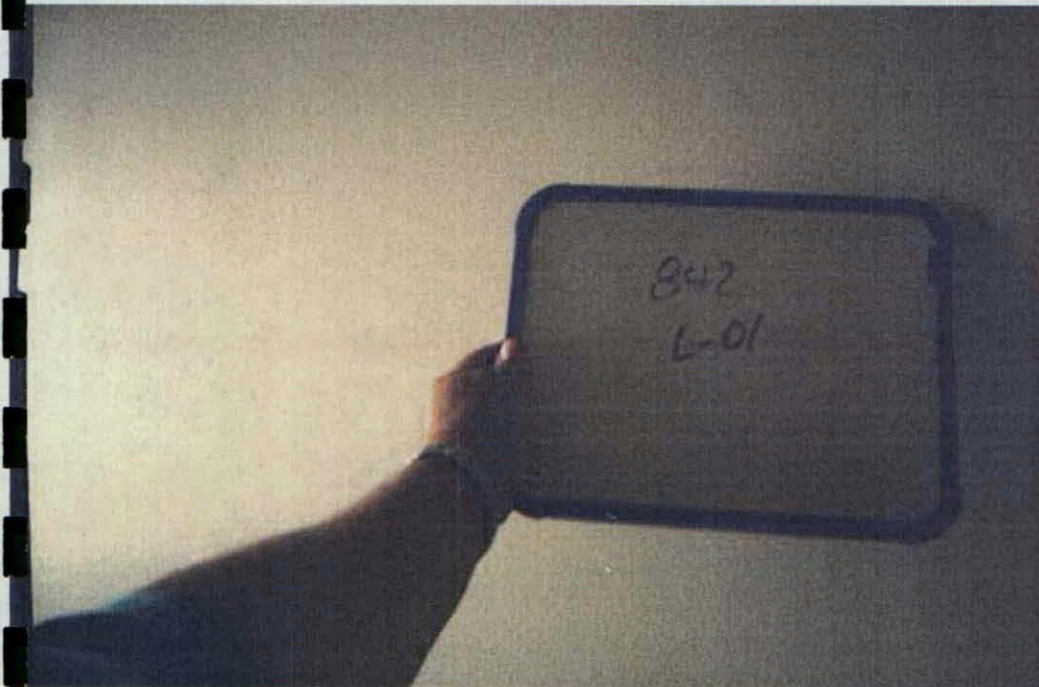
Building 842, Samples 52-54, 12x12 cream floor tile



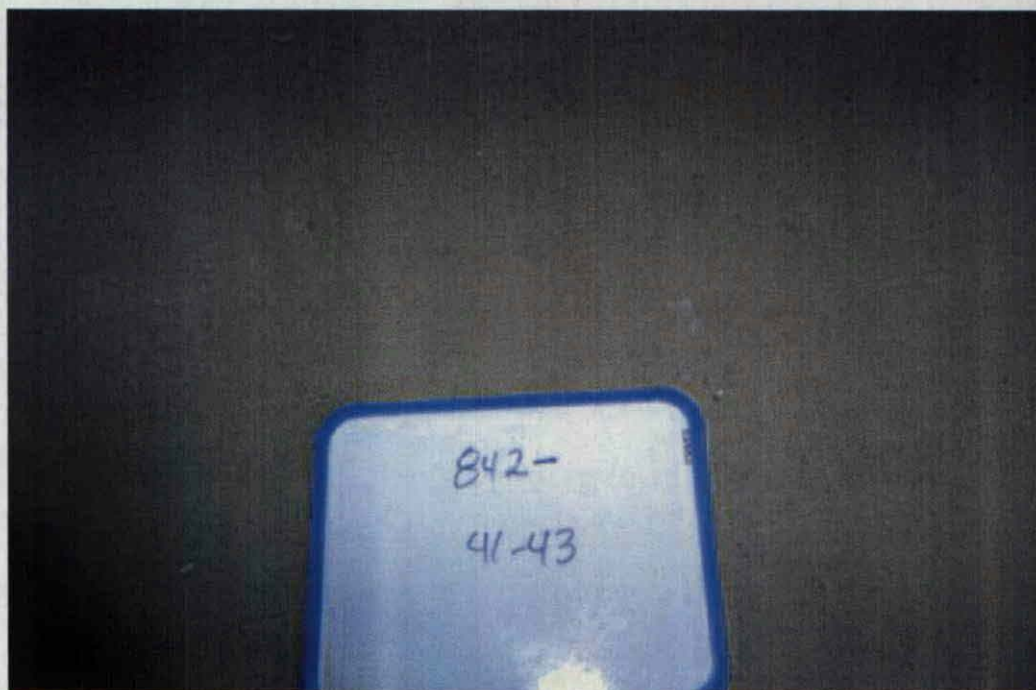
Building 842, Sample 50, 9x9 light gray replacement tile



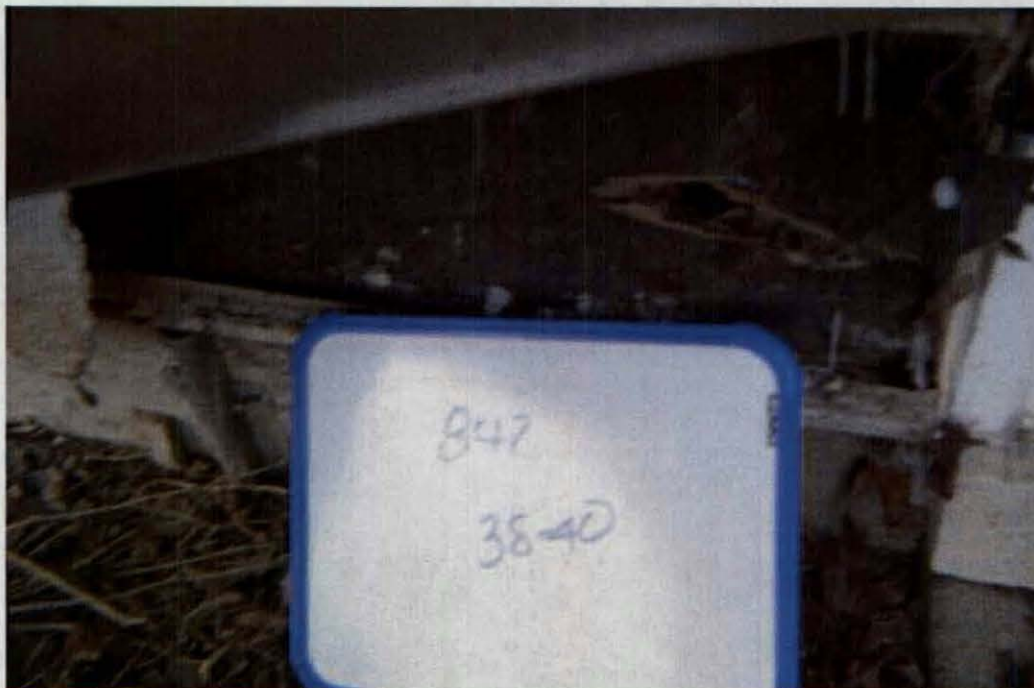
Building 842, Samples 44-46, 9x9 gray floor tile



Building 842, Sample L-01, interior white



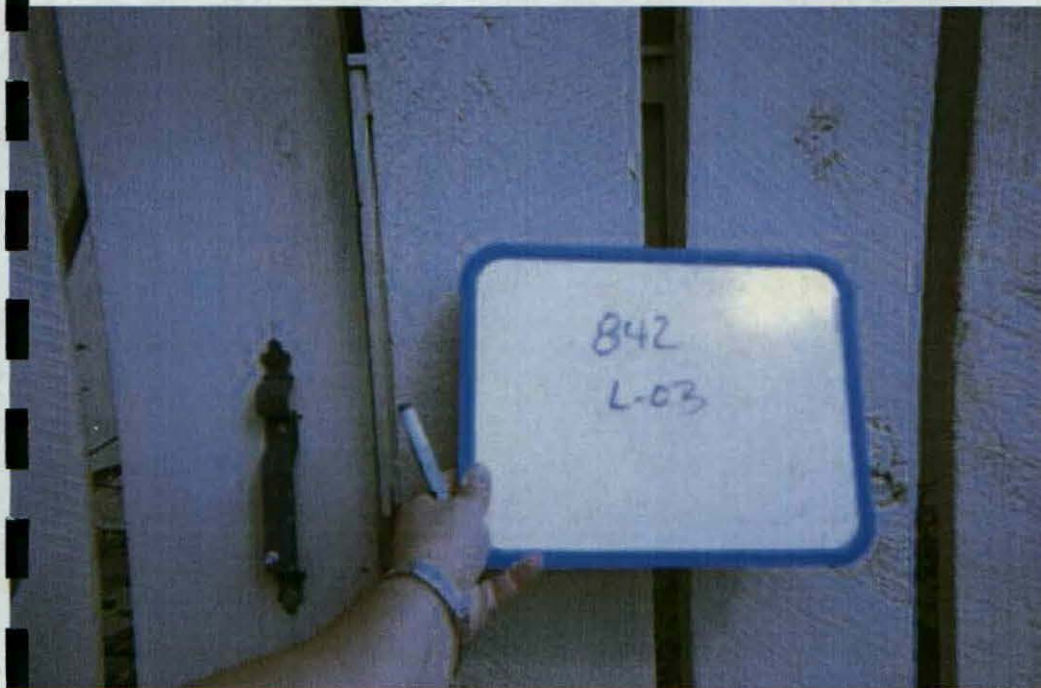
Building 842, Samples 41-43, 9x9 brown floor tile



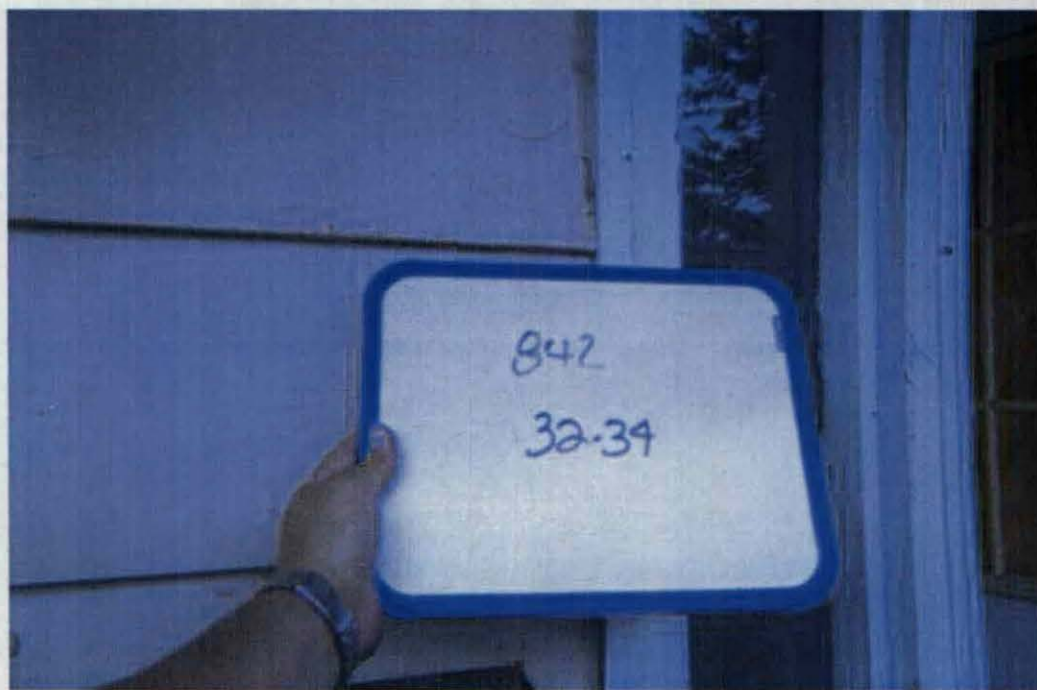
Building 842, Samples 38-40, exterior wall insulation



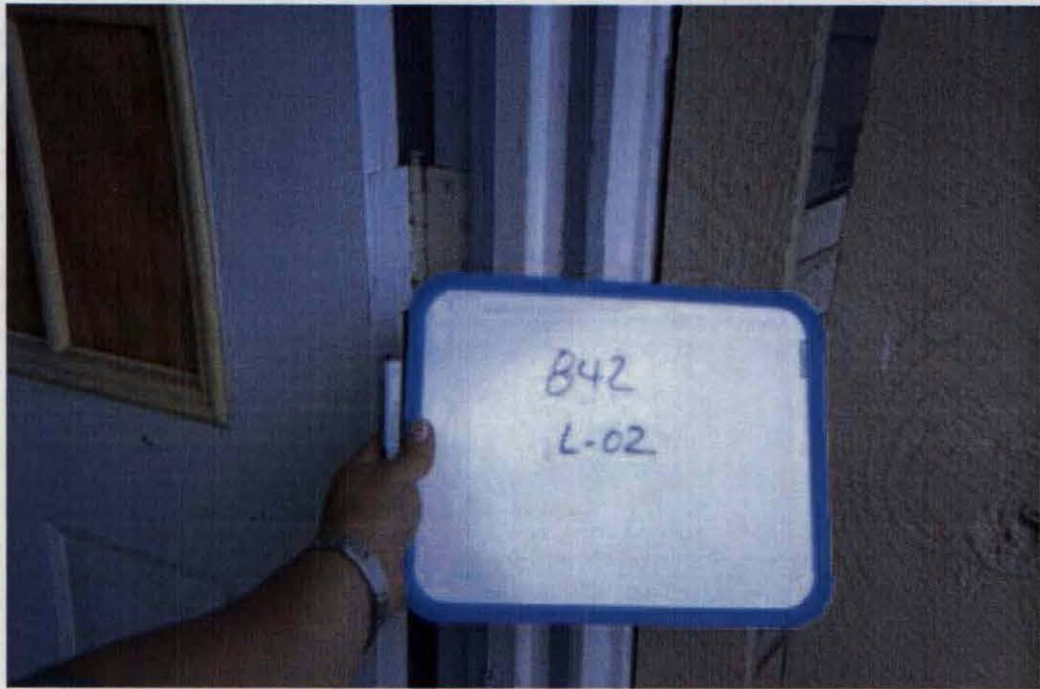
Building 842, Samples 35-37, exterior window caulk



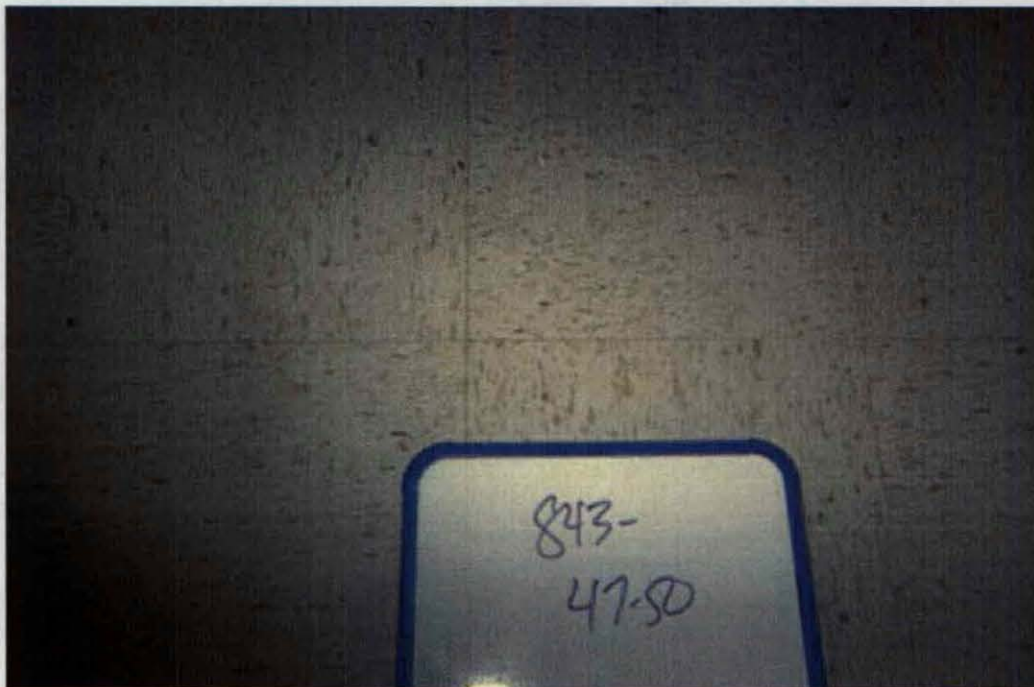
Building 842, Sample L-03, exterior tan fence/building



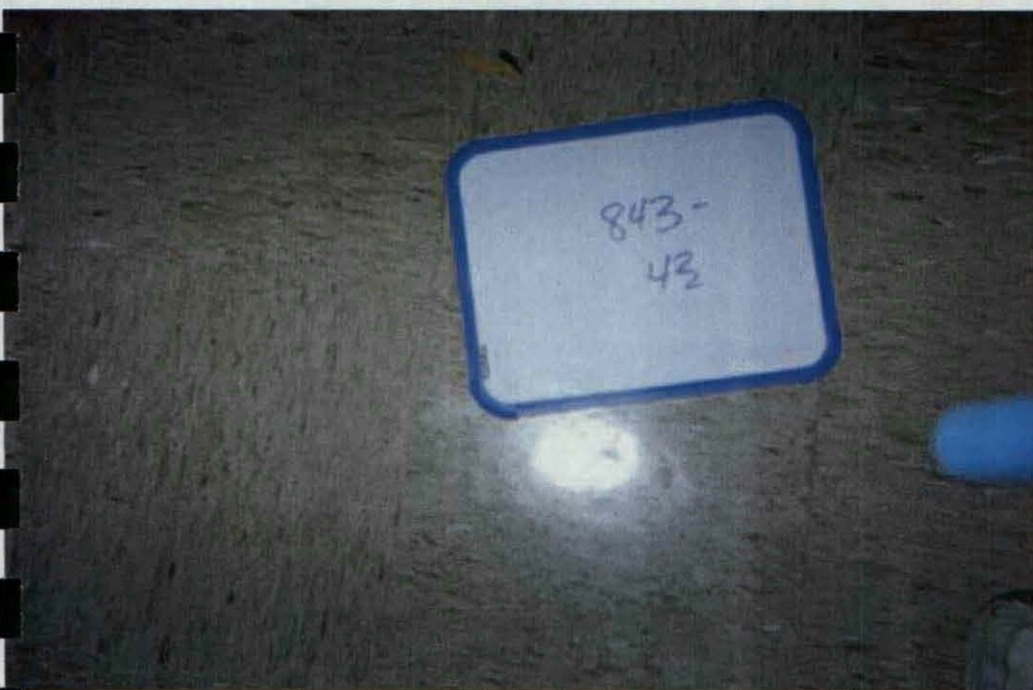
Building 842, Samples 32-34, exterior door caulk



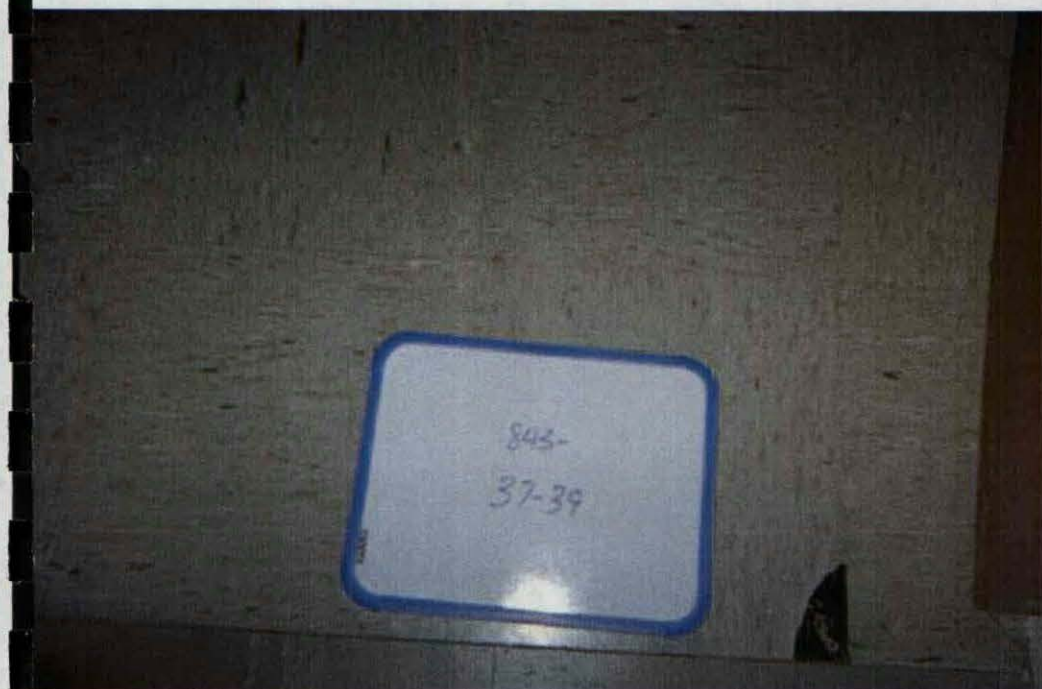
Building 842, sample L-02, exterior white trim



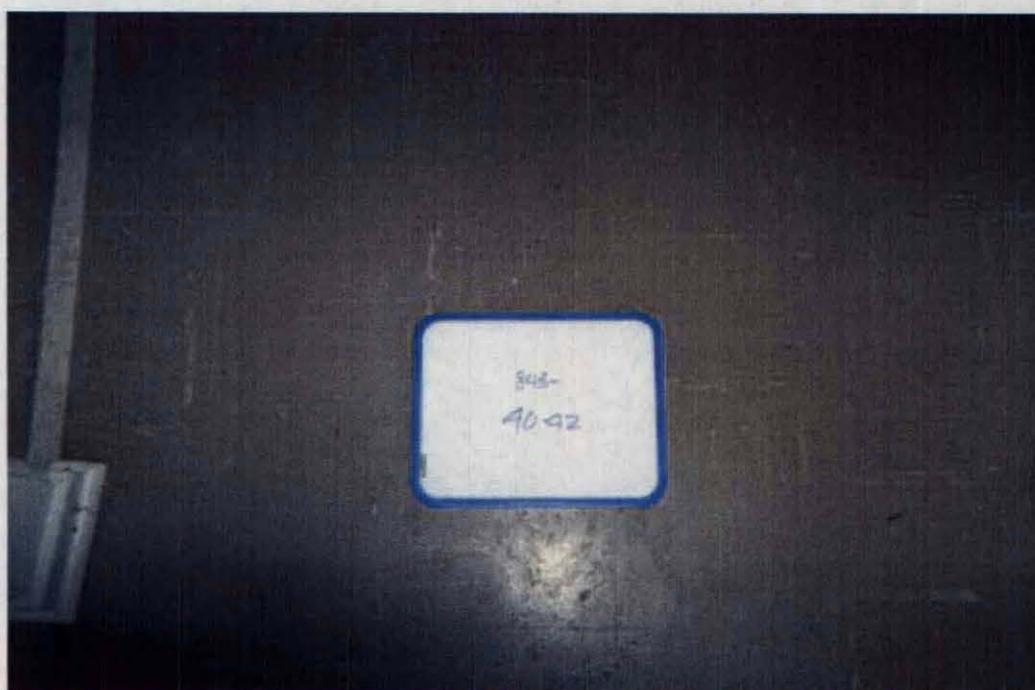
Building 843, Samples, 48-50, 12x12 off-white with streaks floor tile



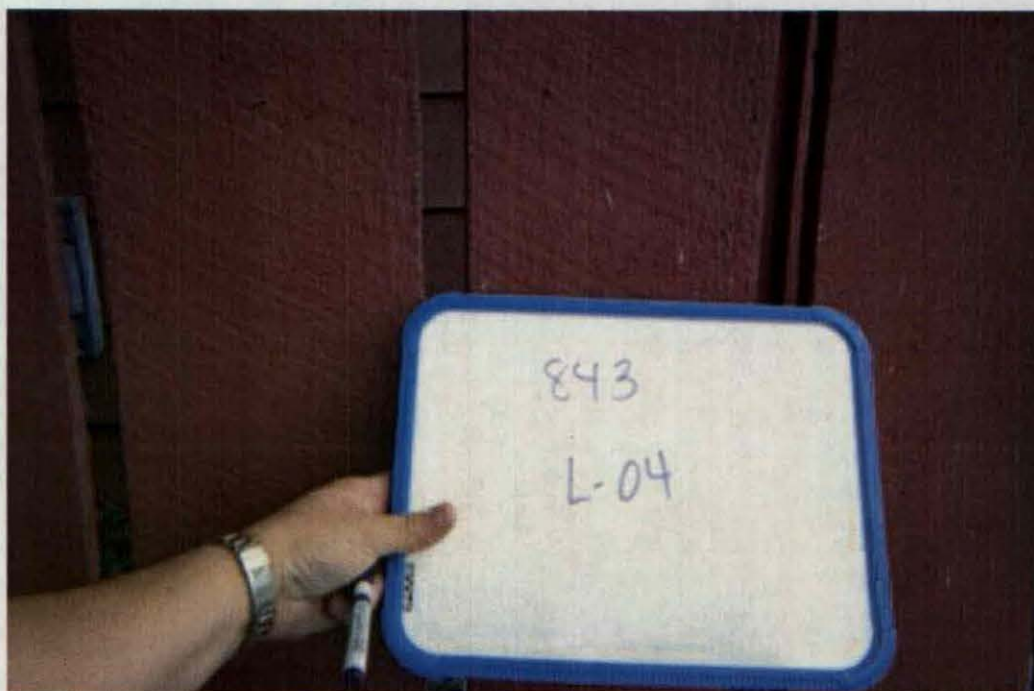
Building 843, Sample 43, 12x12 tan with specks replacement tile



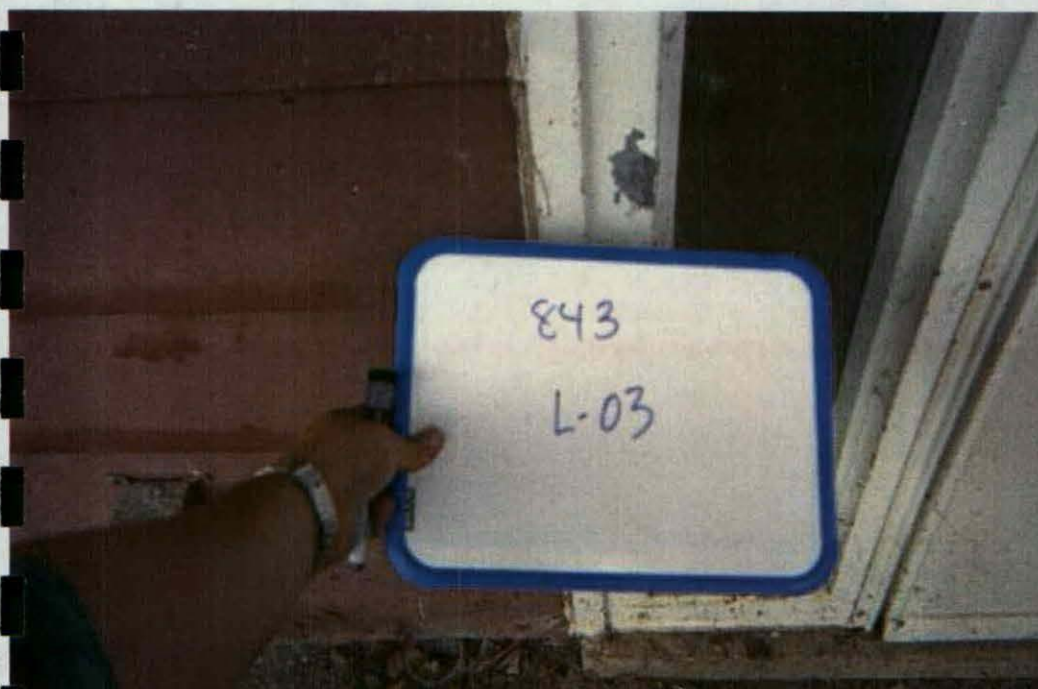
Building 843, Samples 37-39, 12x12 speckled cream floor tile



Building 843, Samples 40-42, 9x9 brown floor tile



Building 843, Sample L-04, exterior red fence/building



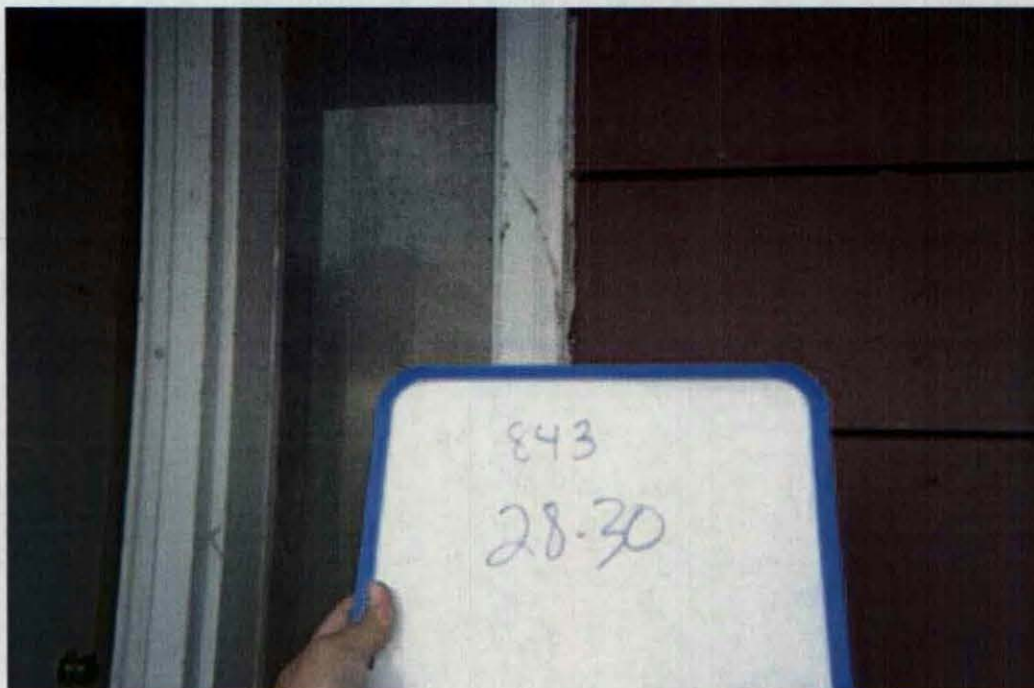
Building 843, Sample L-03, exterior white trim



Building 843, Samples 31-33, exterior window caulk



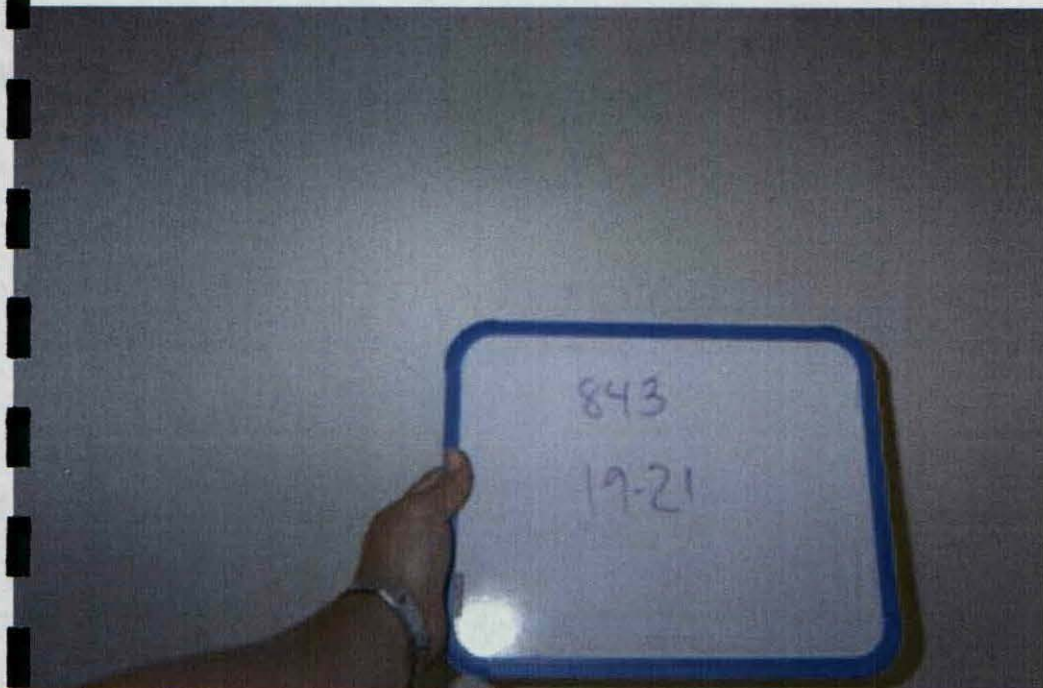
Building 843, Samples 34-36, exterior wall insulation



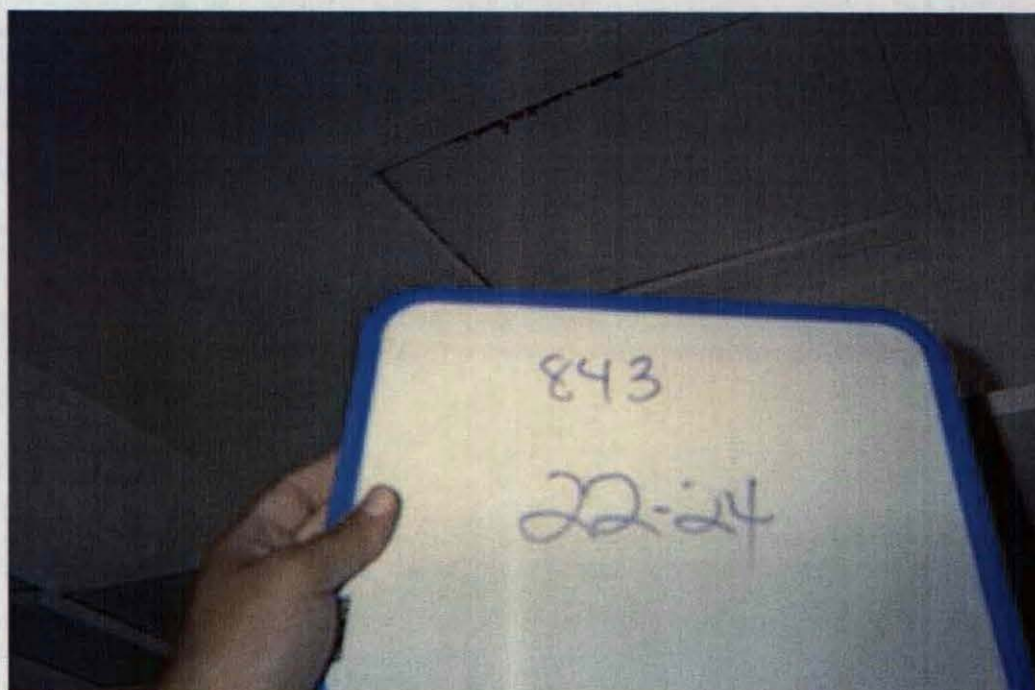
Building 843, Samples 28-30, exterior door caulk



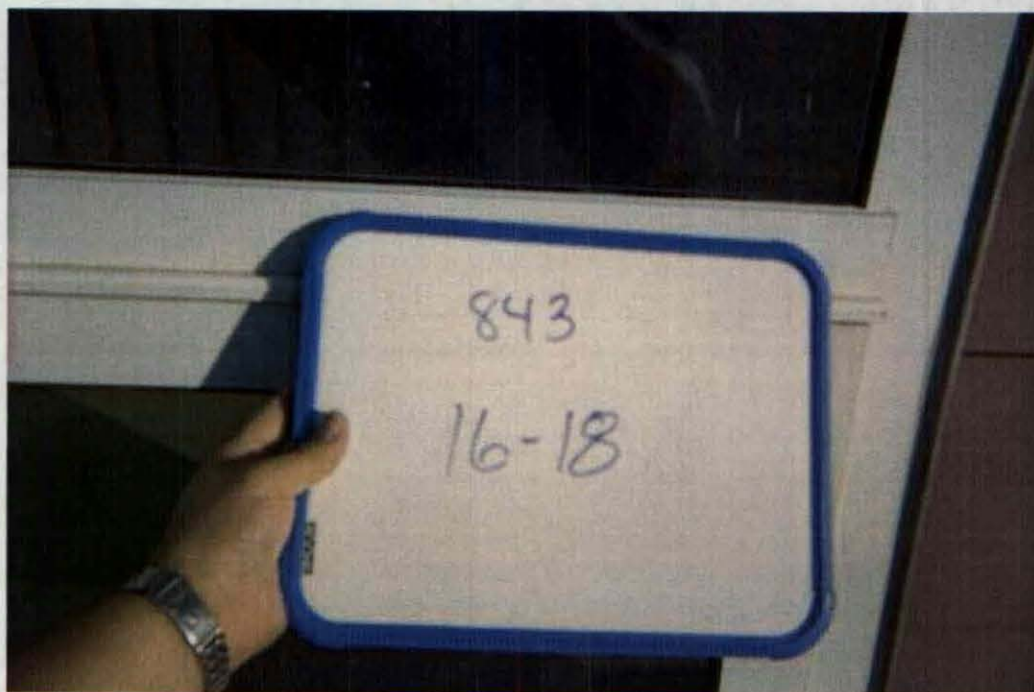
Building 843, Samples 25-27, tub caulk



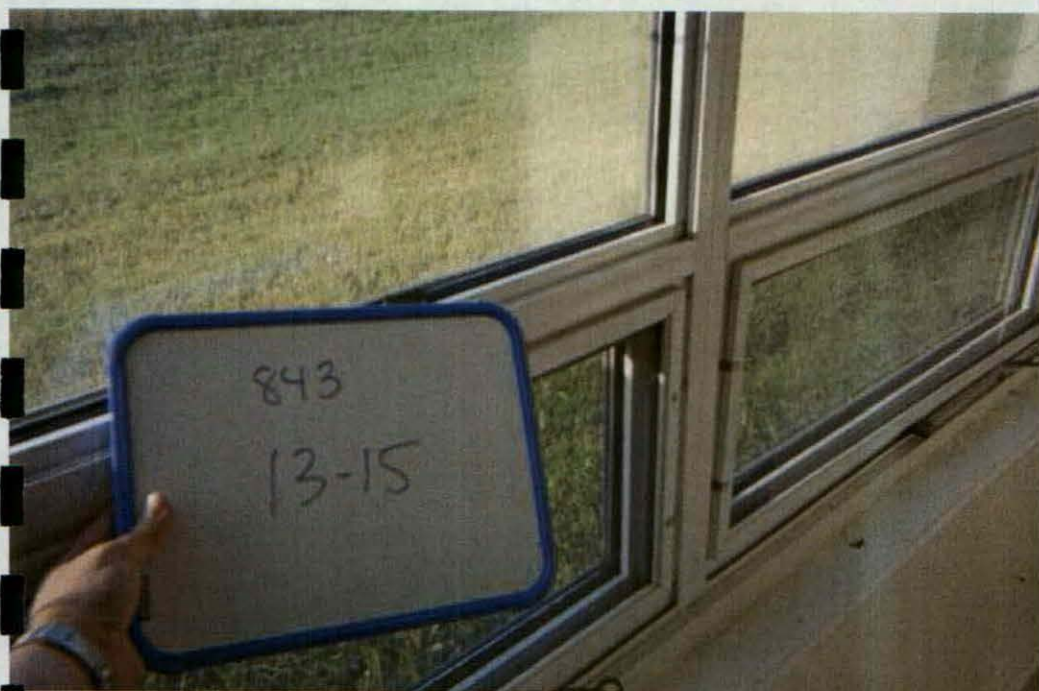
Building 843, Samples 19-21, drywall



Building 843, samples 22-24, attic insulation



Building 843, Samples 16-18, exterior black window caulk



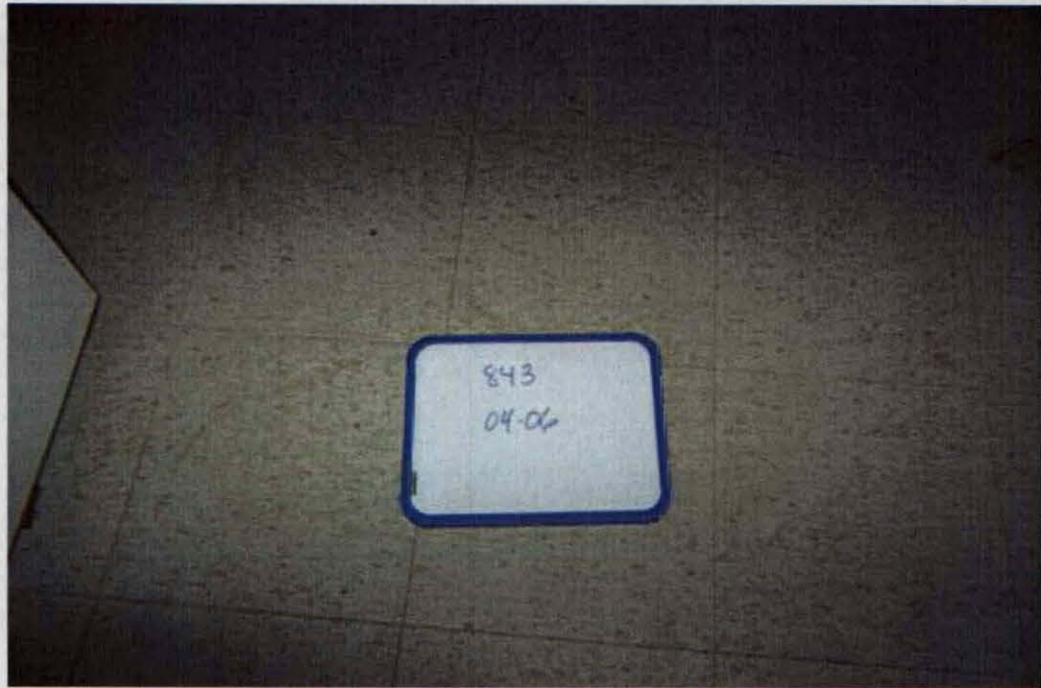
Building 843, Samples 13-15, interior window gasket



Building 843, Samples 07-09, 12x12 gray floor tile



Building 843, Samples 10-12, stair thread



Building 843, Samples 04-06, 12x12 tan floor tile



Building 843, Samples 01-03, vinyl baseboard

Fort Sheridan Residential Units, Fort Sheridan, IL

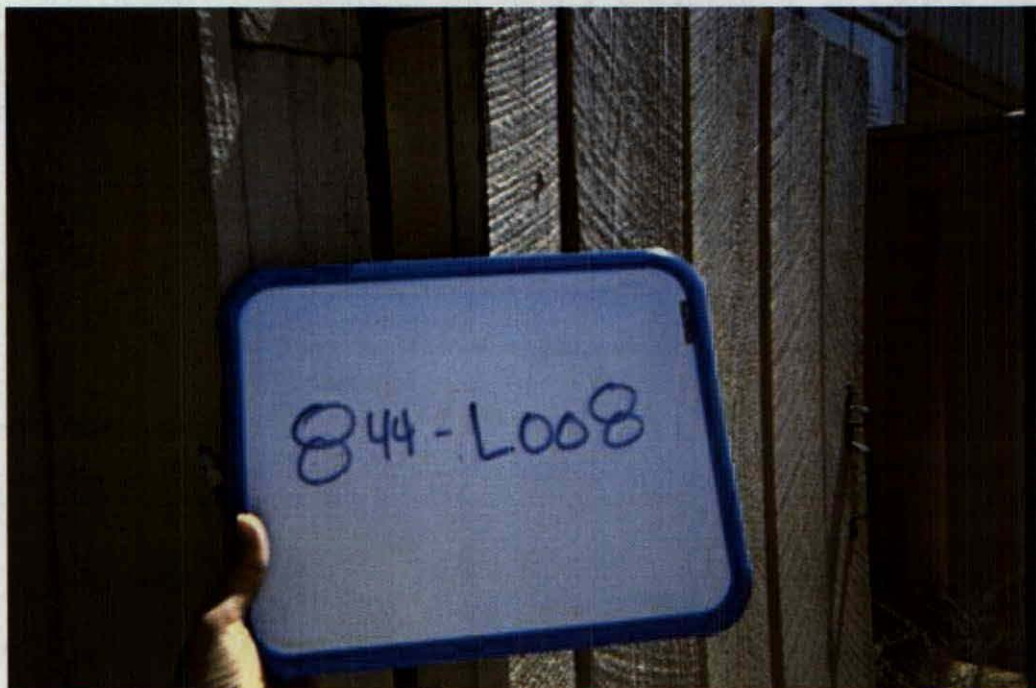


Building 844, Samples 33-35, exterior wallboard



Building 844, Samples 36-38, exterior black window caulk

Fort Sheridan Residential Units, Fort Sheridan, IL

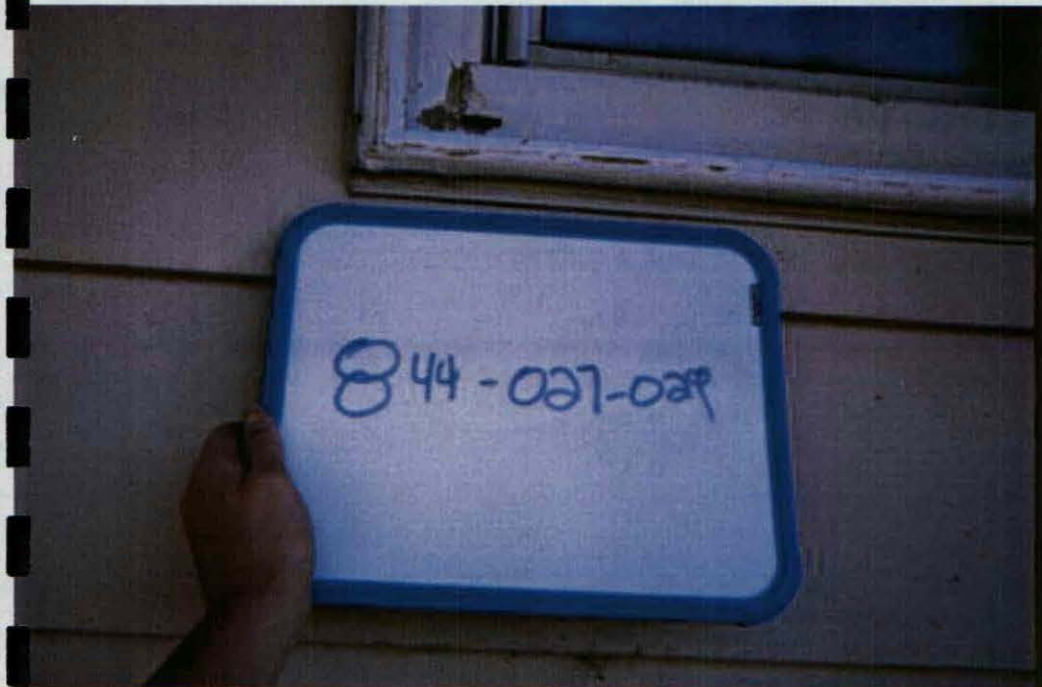


Building 844, Samples L008, tan fence



Building 844, Samples L007, exterior white trim

Fort Sheridan Residential Units, Fort Sheridan, IL

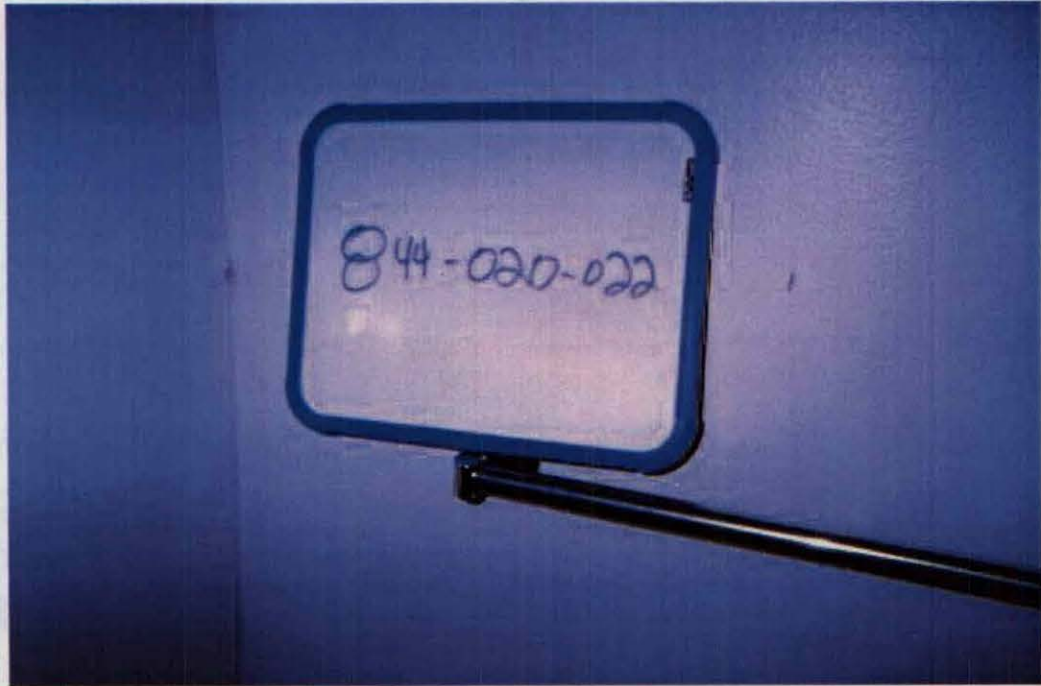


Building 844, Samples 27-29, exterior white window caulk

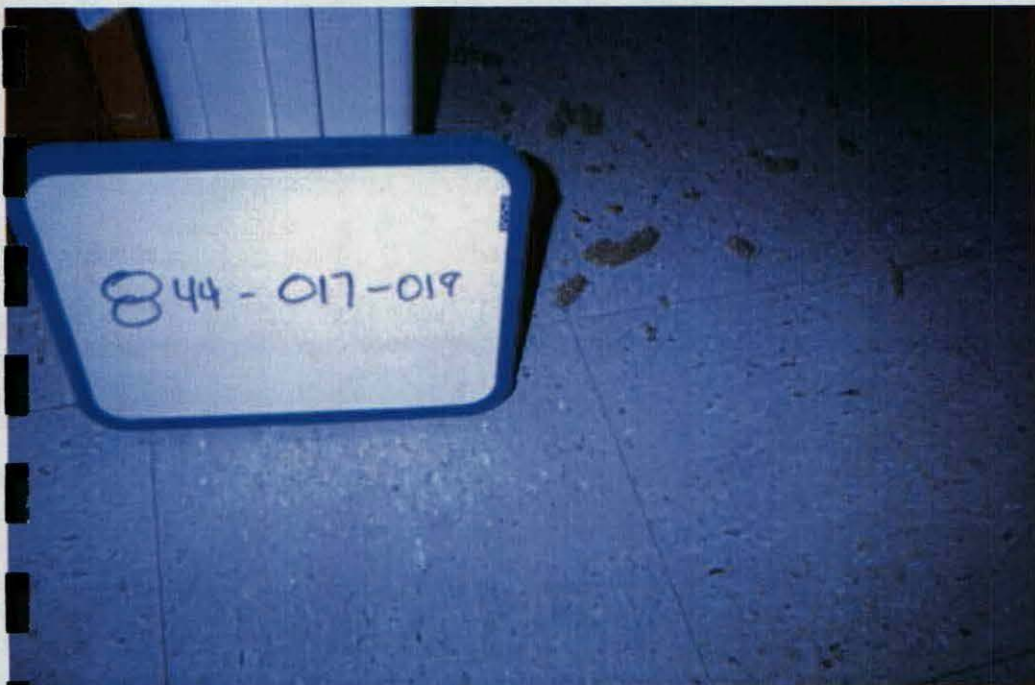


Building 844, Samples 30-32, exterior white door caulk

Fort Sheridan Residential Units, Fort Sheridan, IL

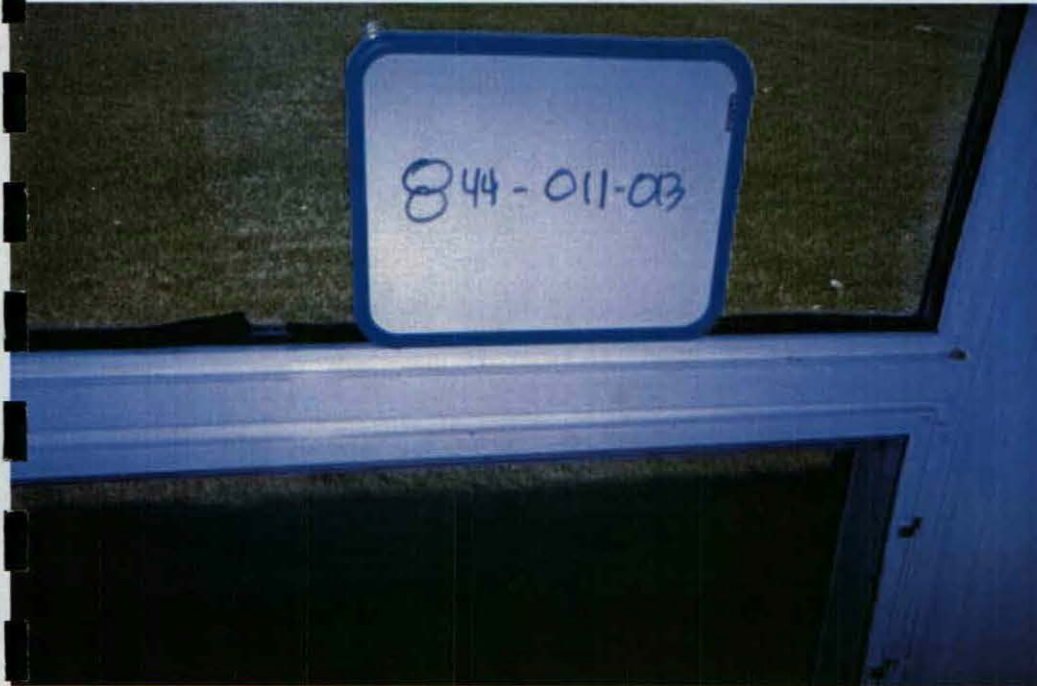


Building 844, Samples 20-22, drywall



Building 844, Samples 17-19, attic insulation

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 844, Samples 11-13, black window gasket

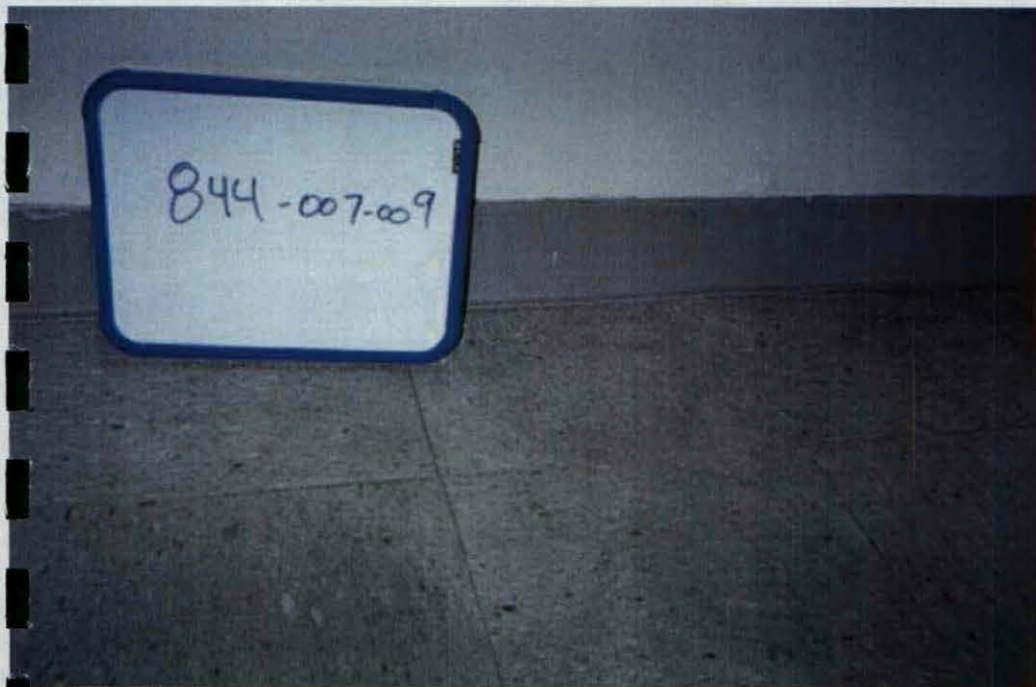


Building 844, Samples 14-16, bathub caulk

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 844, Sample 10, 12x12 beige floor tile



Building 844, Samples 07-09, 12x12 gray floor tile



Building 845, Sample L-005, tan fence



Building 845, Sample L-004, exterior trim around door



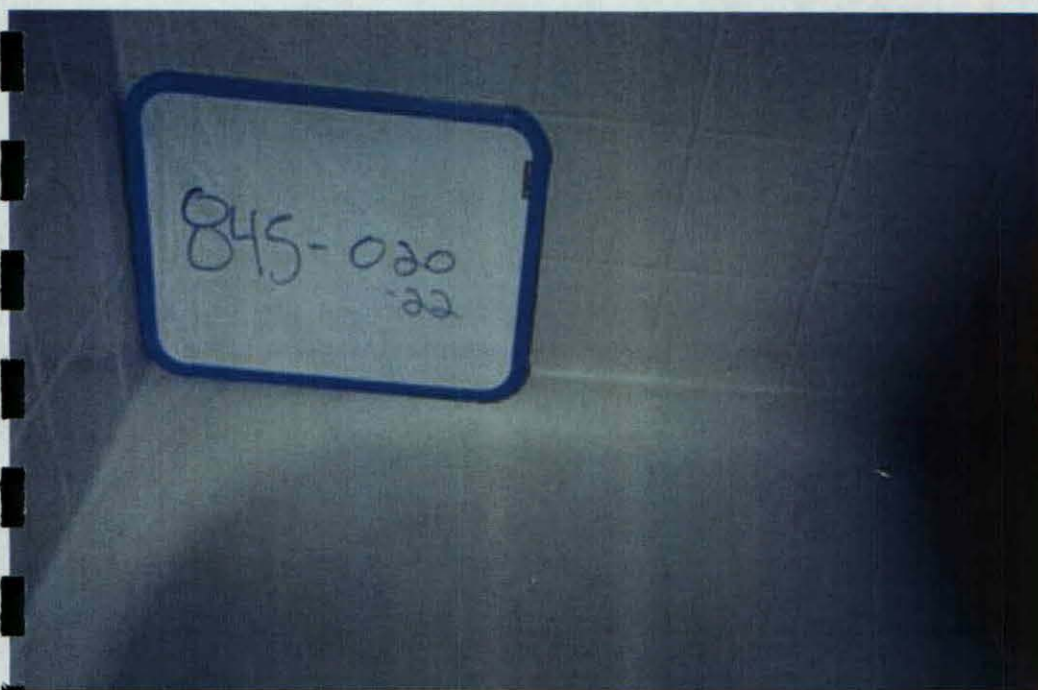
Building 845, Samples 023-025, exterior white window caulk



Building 845, Samples 026-028, exterior door caulk



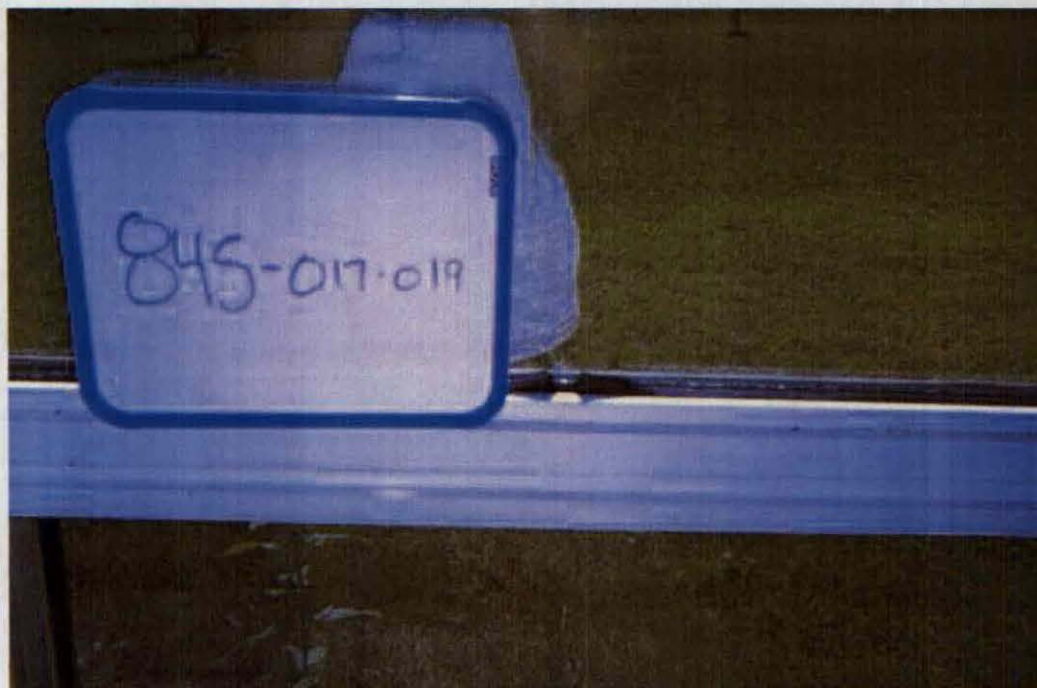
Building 845, Sample L-003, interior white



Building 845, Samples 20-22, tub caulk



Building 845, Samples 10-16, drywall



Building 845, Samples 17-19, interior window gasket



Building 845, Samples 04-09, 12x12 tan floor tile and vinyl baseboard



Building 845, Samples 01-03, 12x12 brown floor tile

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 845, Samples 29-31, 12x12 gray floor tile



Building 844, Samples 01-03, 12 x12 tan floor tile and baseboard

Fort Sheridan Residential Units, Fort Sheridan, IL



Building 845, Samples 38-40, wallboard insulation



Building 845, Samples 41-43, window caulk



Building 846, Sample 034, 12x12 brown replacement tile



Mechanical room



Housing unit



Housing units



Transite pipe in attic



Building 846, Samples 31-33, transite pipe



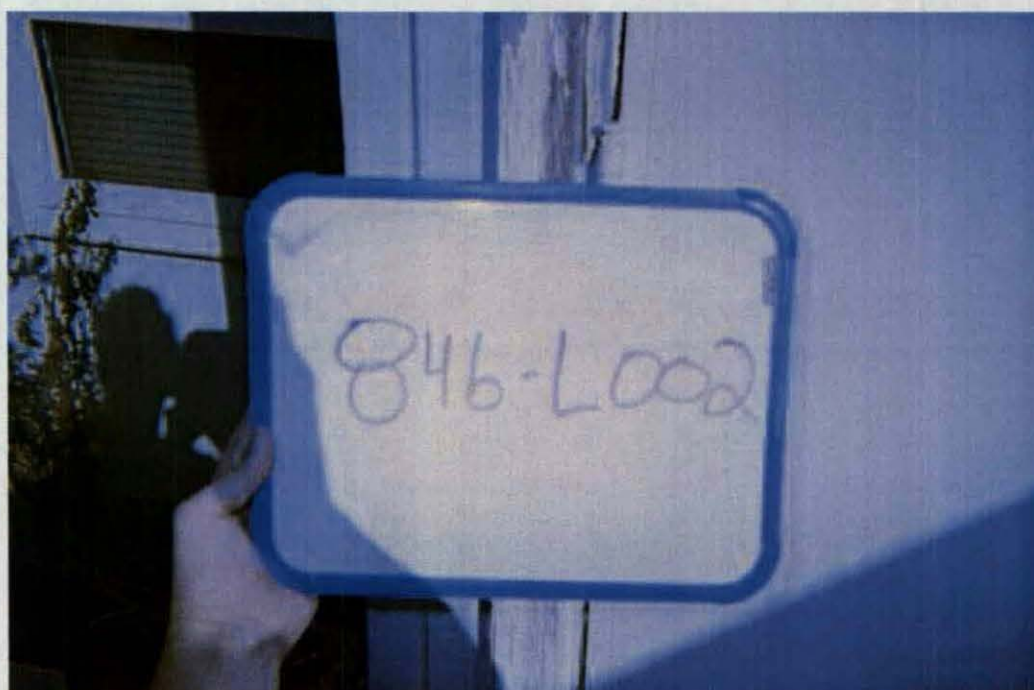
Building 846, Samples 28-30, exterior door caulk



Building 846, Samples 25-27, exterior window caulk



Building 846, Samples 22-24, stair thread



Building 846, Sample L-002, exterior gray trim



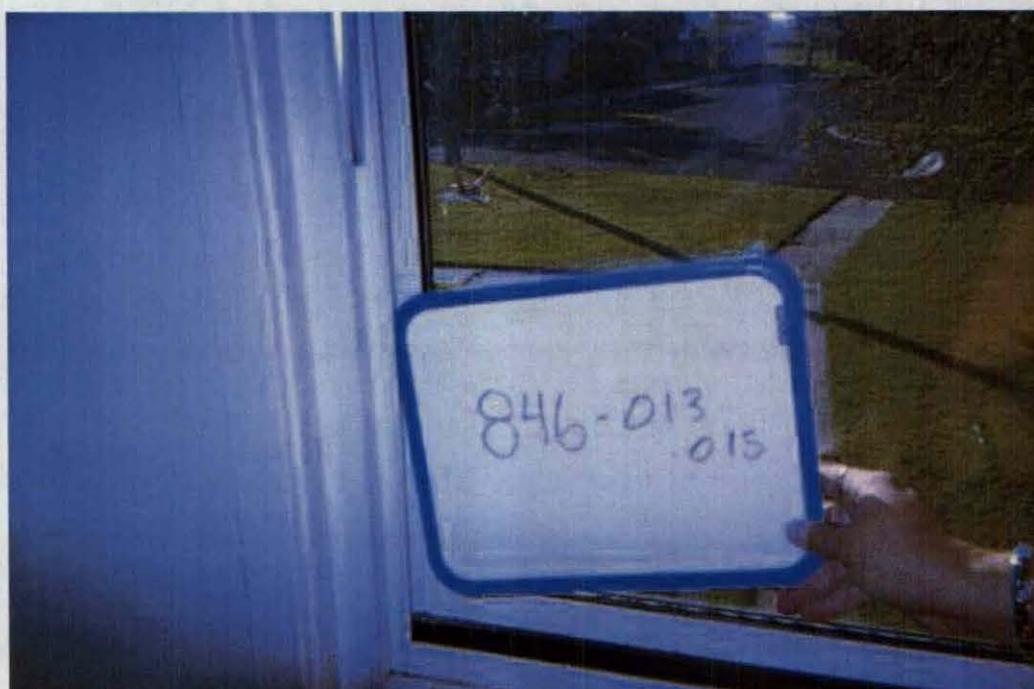
Building 846, Samples 16-18 and 19-21, 12x12 tan floor tile and vinyl baseboard



Building 846, Sample L-001, interior white



Building 846, Samples 10-12, attic insulation



Building 846, Samples 13-15, interior window gasket



Building 846, Samples 07-09, drywall



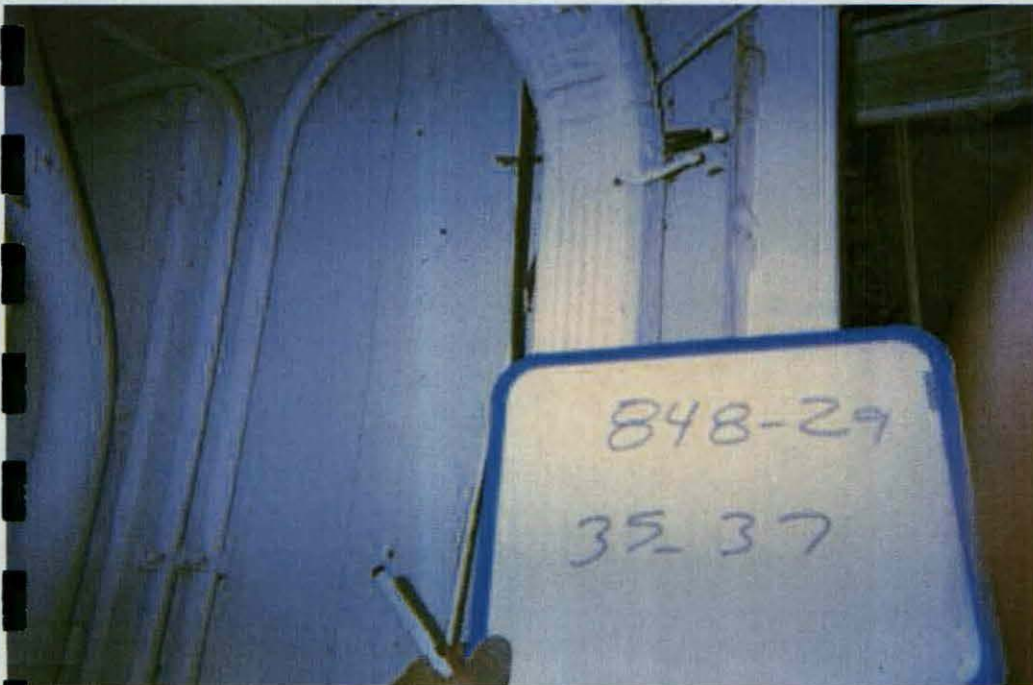
Building 846, Samples 04-06, tub caulk



Building 846, Samples 01-03, 12x12 gray floor tile



Building 848, Samples 32-34, vinyl baseboard

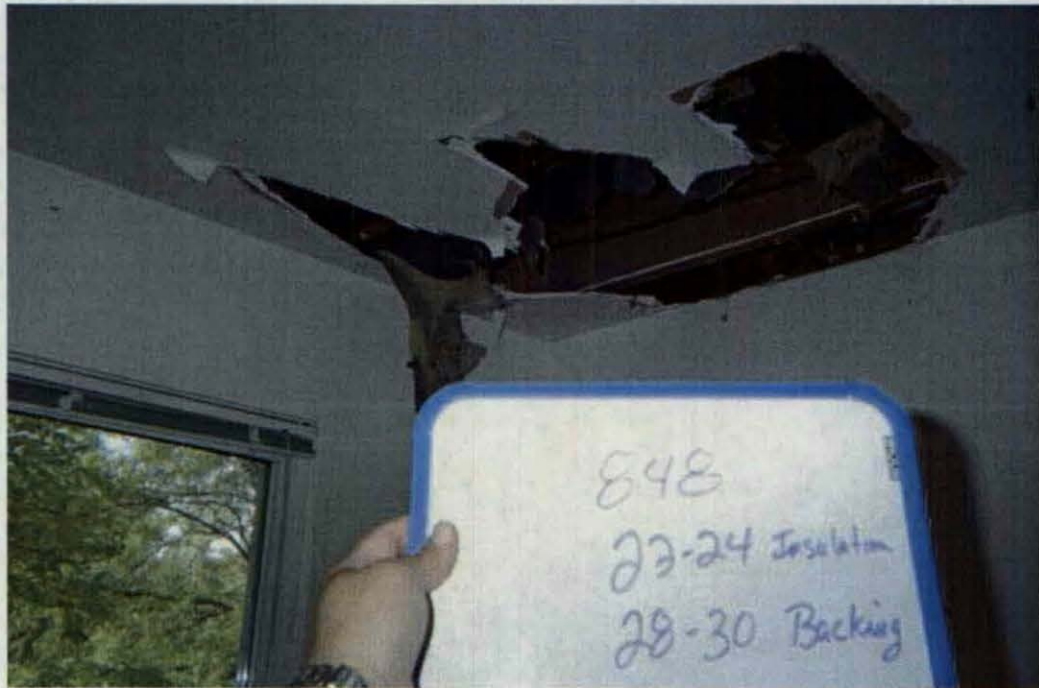


Building 848, Samples 35-37, exterior window caulk



Building 848, Samples 25-27, tub caulk

Fort Sheridan - Residential Buildings



Building 848, Samples 22-24, 28-30, attic insulation and fiberglass backing



Building 848, Samples 19-21, 12x12 gray floor tile and mastic

Fort Sheridan - Residential Buildings

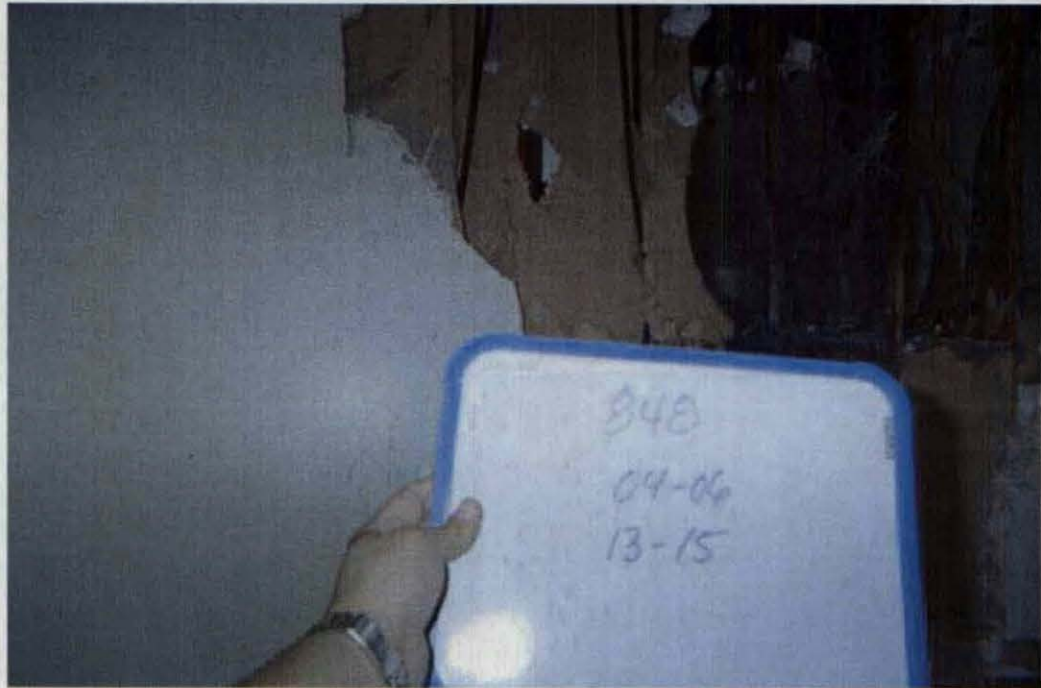


Fire damage in Building 848



Building 848, Samples 16-18, exterior window caulk

Fort Sheridan - Residential Buildings



Building 848, Samples 04-06, 13-15, wallboard and drywall



Building 848, Samples 07-09, interior window gasket

Fort Sheridan - Residential Buildings



Building 848, Sample L-02, exterior gray

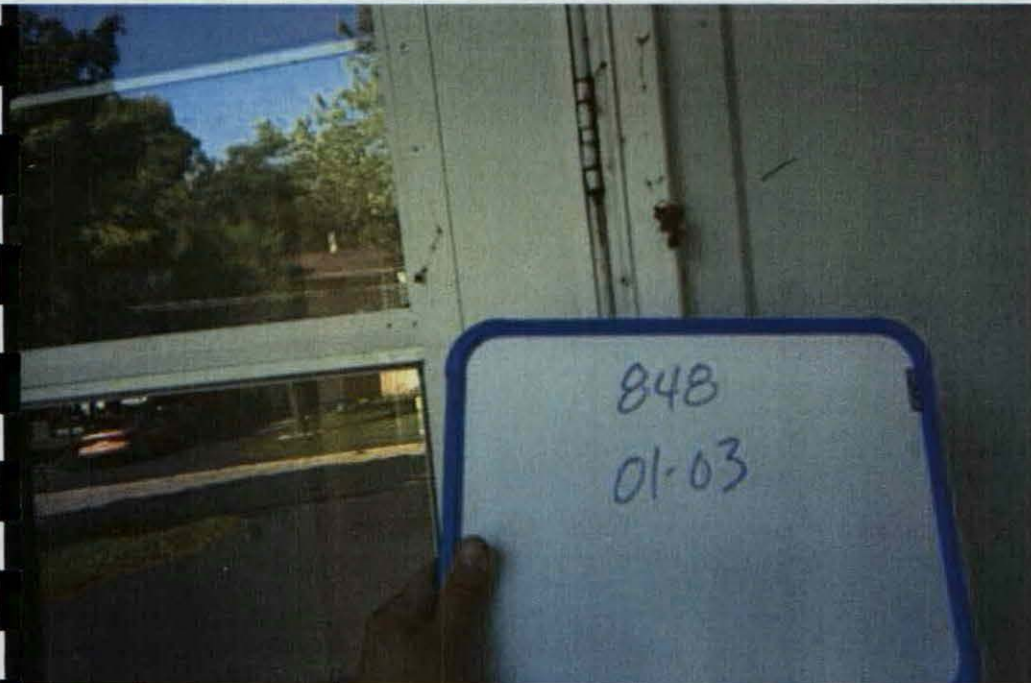


Building 848, Sample L-03, exterior white trim

Fort Sheridan - Residential Buildings



Building 848, Sample L-01, interior white



Building 848, Samples 01-03, exterior door caulk

APPENDIX N
TEM ANALYTICAL RESULTS
REGULATORY INTERPRETATION

NESHAPS 40 CFR 61

Pt. 61, Subpt. M, App. A

- (4) Section 61.152(b)(3)
- (5) Section 61.154(d)
- (6) Section 61.155(a).

[55 FR 48433, Nov. 20, 1990]

APPENDIX A TO SUBPART M—INTERPRETIVE RULE GOVERNING ROOF REMOVAL OPERATIONS

I. Applicability of the Asbestos NESHAP

1.1. Asbestos-containing material (ACM) is material containing more than one percent asbestos as determined using the methods specified in appendix E, subpart E, 40 CFR part 763, section I, Polarized Light Microscopy. The NESHAP classifies ACM as either "friable" or "nonfriable". Friable ACM is ACM that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. Nonfriable ACM is ACM that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.

1.2. Nonfriable ACM is further classified as either Category I ACM or Category II ACM. Category I ACM and Category II ACM are distinguished from each other by their potential to release fibers when damaged. Category I ACM includes asbestos-containing gaskets, packings, resilient floor coverings, resilient floor covering mastic, and asphalt roofing products containing more than one percent asbestos. Asphalt roofing products which may contain asbestos include built-up roofing; asphalt-containing single ply membrane systems; asphalt shingles; asphalt-containing underlayment felts; asphalt-containing roof coatings and mastics; and asphalt-containing base flashings. ACM roofing products that use other bituminous or resinous binders (such as coal tars or pitches) are also considered to be Category I ACM. Category II ACM includes all other nonfriable ACM, for example, asbestos-cement (A/C) shingles, A/C tiles, and transite boards or panels containing more than one percent asbestos. Generally speaking, Category II ACM is more likely to become friable when damaged than is Category I ACM. The applicability of the NESHAP to Category I and II ACM depends on: (1) the condition of the material at the time of demolition or renovation, (2) the nature of the operation to which the material will be subjected, (3) the amount of ACM involved.

1.3. Asbestos-containing material regulated under the NESHAP is referred to as "regulated asbestos-containing material" (RACM). RACM is defined in §61.141 of the NESHAP and includes: (1) friable asbestos-containing material; (2) Category I nonfriable ACM that has become friable; (3) Category I nonfriable ACM that has been or will be sanded, ground, cut, or abraded; or (4) Category II nonfriable ACM that has already been or is likely to become crumbled, pulverized, or reduced to

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powder. If the coverage threshold for RACM is met or exceeded in a renovation or demolition operation, then all friable ACM in the operation, and in certain situations, nonfriable ACM in the operation, are subject to the NESHAP.

A. Threshold Amounts of Asbestos-Containing Roofing Material

1.A.1. The NESHAP does not cover roofing projects on single family homes or on residential buildings containing four or fewer dwelling units. 40 CFR 61.141. For other roofing renovation projects, if the total asbestos-containing roof area undergoing renovation is less than 160 ft², the NESHAP does not apply, regardless of the removal method to be used, the type of material (Category I or II), or its condition (friable versus nonfriable). 40 CFR 61.145(a)(4). However, EPA would recommend the use of methods that damage asbestos-containing roofing material as little as possible. EPA has determined that where a rotating blade (RB) roof cutter or equipment that similarly damages the roofing material is used to remove Category I nonfriable asbestos-containing roofing material, the removal of 5580 ft² of that material will create 160 ft² of RACM. For the purposes of this interpretive rule, "RB roof cutter" means an engine-powered roof cutting machine with one or more rotating cutting blades the edges of which are blunt. (Equipment with blades having sharp or tapered edges, and/or which does not use a rotating blade, is used for "slicing" rather than "cutting" the roofing material; such equipment is not included in the term "RB roof cutter".) Therefore, it is EPA's interpretation that when an RB roof cutter or equipment that similarly damages the roofing material is used to remove Category I nonfriable asbestos-containing roofing material, any project that is 5580 ft² or greater is subject to the NESHAP; conversely, it is EPA's interpretation that when an RB roof cutter or equipment that similarly damages the roofing material is used to remove Category I nonfriable asbestos-containing roofing material in a roof removal project that is less than 5580 ft², the project is not subject to the NESHAP, except that notification is always required for demolitions. EPA further construes the NESHAP to mean that if slicing or other methods that do not sand, grind, cut or abrade will be used on Category I nonfriable ACM, the NESHAP does not apply, regardless of the area of roof to be removed.

1.A.2. For asbestos cement (A/C) shingles (or other Category II roofing material), if the area of the roofing material to be removed is at least 160 ft² and the removal methods will crumble, pulverize, reduce to powder, or contaminate with RACM (from other ACM that has been crumbled, pulverized or reduced to

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§ 763.87

determined that the thermal system insulation is fiberglass, foam glass, rubber, or other non-ACBM.

(c) *Miscellaneous material.* In a manner sufficient to determine whether material is ACM or not ACM, an accredited inspector shall collect bulk samples from each homogeneous area of friable miscellaneous material that is not assumed to be ACM.

(d) *Nonfriable suspected ACBM.* If any homogeneous area of nonfriable suspected ACBM is not assumed to be ACM, then an accredited inspector shall collect, in a manner sufficient to determine whether the material is ACM or not ACM, bulk samples from the homogeneous area of nonfriable suspected ACBM that is not assumed to be ACM.

§ 763.87 Analysis.

(a) Local education agencies shall have bulk samples, collected under § 763.86 and submitted for analysis, analyzed for asbestos using laboratories accredited by the National Bureau of Standards (NBS). Local education agencies shall use laboratories which have received interim accreditation for polarized light microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Analysis Quality Assurance Program until the NBS PLM laboratory accreditation program for PLM is operational.

(b) Bulk samples shall not be composited for analysis and shall be analyzed for asbestos content by PLM, using the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" found at appendix E to subpart E of this part.

(c)(i) A homogeneous area is considered not to contain ACM only if the results of all samples required to be collected from the area show asbestos in amounts of 1 percent or less.

(2) A homogeneous area shall be determined to contain ACM based on a finding that the results of at least one sample collected from that area shows that asbestos is present in an amount greater than 1 percent.

(d) The name and address of each laboratory performing an analysis, the date of analysis, and the name and signature of the person performing the analysis shall be submitted to the per-

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son designated under § 763.84 for inclusion into the management plan within 30 days of the analysis.

[52 FR 41846, Oct. 30, 1987, as amended at 60 FR 31922, June 19, 1995]

§ 763.88 Assessment.

(a)(1) For each inspection and reinspection conducted under § 763.85 (a) and (c) and previous inspections specified under § 763.99, the local education agency shall have an accredited inspector provide a written assessment of all friable known or assumed ACBM in the school building.

(2) Each accredited inspector providing a written assessment shall sign and date the assessment, provide his or her State of accreditation, and if applicable, accreditation number, and submit a copy of the assessment to the person designated under § 763.84 for inclusion in the management plan within 30 days of the assessment.

(b) The inspector shall classify and give reasons in the written assessment for classifying the ACBM and suspected ACBM assumed to be ACM in the school building into one of the following categories:

(1) Damaged or significantly damaged thermal system insulation ACM.

(2) Damaged friable surfacing ACM.

(3) Significantly damaged friable surfacing ACM.

(4) Damaged or significantly damaged friable miscellaneous ACM.

(5) ACBM with potential for damage.

(6) ACBM with potential for significant damage.

(7) Any remaining friable ACBM or friable suspected ACBM.

(c) Assessment may include the following considerations:

(1) Location and the amount of the material, both in total quantity and as a percentage of the functional space.

(2) Condition of the material, specifying:

(i) Type of damage or significant damage (e.g., flaking, blistering, water damage, or other signs of physical damage).

(ii) Severity of damage (e.g., major flaking, severely torn jackets, as opposed to occasional flaking, minor tears to jackets).

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Pt. 763, Subpt. E, App. E

land deed or other record along with a notice warning against excavation of the area.

[52 FR 41897, Oct. 30, 1987, as amended at 62 FR 1834, Jan. 14, 1997]

APPENDIX E TO SUBPART E—INTERIM METHOD OF THE DETERMINATION OF ASBESTOS IN BULK INSULATION SAMPLES

SECTION 1, POLARIZED LIGHT MICROSCOPY

1.1 Principle and Applicability

Bulk samples of building materials taken for asbestos identification are first examined for homogeneity and preliminary fiber identification at low magnification. Positive identification of suspect fibers is made by analysis of subsamples with the polarized light microscope.

The principles of optical mineralogy are well established.¹² A light microscope equipped with two polarizing filters is used to observe specific optical characteristics of a sample. The use of plane polarized light allows the determination of refractive indices along specific crystallographic axes. Morphology and color are also observed. A retardation plate is placed in the polarized light path for determination of the sign of elongation using orthoscopic illumination. Orientation of the two filters such that their vibration planes are perpendicular (crossed polars) allows observation of the birefringence and extinction characteristics of anisotropic particles.

Quantitative analysis involves the use of point counting. Point counting is a standard technique in petrography for determining the relative areas occupied by separate minerals in thin sections of rock. Background information on the use of point counting² and the interpretation of point count data³ is available.

This method is applicable to all bulk samples of friable insulation materials submitted for identification and quantitation of asbestos components.

1.2 Range

The point counting method may be used for analysis of samples containing from 0 to 100 percent asbestos. The upper detection limit is 100 percent. The lower detection limit is less than 1 percent.

1.3 Interferences

Fibrous organic and inorganic constituents of bulk samples may interfere with the identification and quantitation of the asbestos mineral content. Spray-on binder materials may coat fibers and affect color or obscure optical characteristics to the extent of masking fiber identity. Fine particles of other materials may also adhere to fibers to

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an extent sufficient to cause confusion in identification. Procedures that may be used for the removal of interferences are presented in Section 1.7.2.2.

1.4 Precision and Accuracy

Adequate data for measuring the accuracy and precision of the method for samples with various matrices are not currently available. Data obtained for samples containing a single asbestos type in a simple matrix are available in the EPA report *Bulk Sample Analysis for Asbestos Content: Evaluation of the Tentative Method*.⁴

1.5 Apparatus

1.5.1 Sample Analysis

A low-power binocular microscope, preferably stereoscopic, is used to examine the bulk insulation sample as received.

- *Microscope*: binocular, 10-45X (approximate).
- *Light Source*: Incandescent or fluorescent.
- *Forceps, Dissecting Needles, and Probes*
- *Glassine Paper or Clean Glass Plate*
- Compound microscope requirements: A polarized light microscope complete with polarizer, analyzer, port for wave retardation plate, 360° graduated rotating stage, substage condenser, lamp, and lamp iris.
- *Polarized Light Microscope*: described above.
- *Objective Lenses*: 10X, 20X, and 40X or near equivalent.
- *Dispersion Staining Objective Lens* (optional)
- *Ocular Lens*: 10X minimum.
- *Eyeiece Reticle*: cross hair or 25 point Chalkley Point Array.
- *Compensator Plate*: 550 millimicron retardation.

1.5.2 Sample Preparation

Sample preparation apparatus requirements will depend upon the type of insulation sample under consideration. Various physical and/or chemical means may be employed for an adequate sample assessment.

- *Ventilated Hood* or negative pressure glove box.
- *Microscope Slides*
- *Coverslips*
- *Mortar and Pestle*: agate or porcelain. (optional)
- *Wylie Mill* (optional)
- *Beakers and Assorted Glassware* (optional)
- *Certrifuge* (optional)
- *Filtration apparatus* (optional)
- *Low temperature asher* (optional)

1.6 Reagents

1.6.1 Sample Preparation

- *Distilled Water* (optional)
- *Dilute CH₃COOH*: ACS reagent grade (optional)
- *Dilute HCl*: ACS reagent grade (optional)

Illinois Department of
**Public
Health**

Reference 4

George H. Ryan, Governor • John R. Lumpkin, M.D., M.P.H., Director

525-535 West Jefferson Street • Springfield, Illinois 62761-0001

October 24, 2001

KATHY NICHOLSON
OCCUPATIONAL TRAINING AND SUPPLY, INC.
12601 S. SPRINGFIELD
ALSIP IL 60658

Re: Analysis of Floor Tile Samples

Dear Training Course Providers:

Recently, the Department has encountered a situation where an LEA had decided to remove floor tile because they believed that the tiles did not contain asbestos. The LEA had samples results indicating that the floor tile was negative for asbestos. These results were obtained through the use of polarized light microscopy. When the Department inspected the project, samples were taken and analyzed by transmission electron microscopy. The analysis demonstrated that a significant amount (approximately 24-30%) of chrysotile asbestos was in the floor tile. As a result of this finding, the school was required to clean all contaminated areas and ensure that the environment was safe for reoccupancy. In light of these recent events, the Department believes that it would be in the best interest of public health to have floor tile that has a negative PLM result to be confirmed by TEM analysis prior to disturbing the material. In support of this recommendation, we ask that the training course providers and project designers inform their clientele about the EPA advisory discussed below and strongly recommend that negative PLM results for floor tile be verified by TEM analysis to avoid any future potential contamination situations as described above.

The U.S. EPA has issued an advisory regarding the test methods utilized to analyze bulk samples for floor tile and other layered materials. The advisory, which was published in 1994, states that an improved method has been developed for analyzing bulk samples with low concentrations of asbestos, thin fibers below the resolution of polarized light microscopy (similar to those found in floor tile), and clearer instructions for multilayered samples. This improved method utilizes transmission electron microscopy to analyze the bulk samples with thin fibers and low concentrations. In this advisory, the EPA recommends that LEA's who have bulk sample results for floor tile that were analyzed by PLM indicating that the floor tile is non-asbestos containing material, to reconsider whether the fibers were thin enough to be missed during PLM analysis. Furthermore, the advisory states that it may be prudent for the LEA's to assume that the floor tile or multilayered materials are asbestos or resample and analyze them with TEM. The EPA also reminds LEA's that they are covered by the NESHAP regulations and before conducting any work which may subject the LEA to NESHAP regulations, that they are responsible for knowing whether asbestos is contained in the building product. Further, the EPA states that all previous results that were reported as greater than 1 percent are acceptable as demonstrating that the material is asbestos containing. Floor tile and multilayered materials, such as stucco and acoustical plaster that do not report results for each layer (discrete strata), should be considered for TEM analysis before conducting activities that may subject the LEA to NESHAP regulations and may result in a major asbestos fiber release.

Your cooperation in this matter is greatly appreciated. If you have any questions, please contact me or a member of my staff at the Illinois Department of Public Health, Asbestos Program, 525 West Jefferson Street, Springfield, IL 62761 or telephone (217) 782-3517, for the hearing impaired only (TTY# 800-547-0466).

Sincerely,

R. Kent Cook

R. Kent Cook
Asbestos Program Manager

enc.: Asbestos Sampling Bulletin

ASBESTOS SAMPLING BULLETIN
September 30, 1994

Supplementary Guidance on Bulk Sample Collection and Analysis
U.S. EPA, OPPT/CMD (7404)

I. Introduction

Recent Notices in the Federal Register (59 FR 542, Jan. 5, 1994; and (59 FR 38970, Aug. 1, 1994), announced clarifications regarding the analysis of bulk samples obtained from multi-layered systems to determine the presence of asbestos. As part of a public outreach effort, the Environmental Protection Agency (EPA) developed this supplemental guidance bulletin. The public should take note that the contents are presented as guidance. This guidance does not change current regulatory requirements of the 1987 Asbestos in Schools Rule (AHERA). Local education agencies (LEAs) may choose to adopt the recommended guidance as a matter of policy offering added precaution and protection for workers and building occupants, and also to avoid the possibility of non-compliance with EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations.

This bulletin was developed by EPA primarily for two reasons:

- 1) to provide guidance regarding the adoption and use of an improved method for the analysis of asbestos in bulk samples ("Test Method -- Method for the Determination of Asbestos in Bulk Building Materials," EPA/600/R-93/116, July 1993). The improved method is especially useful for detecting the presence of asbestos in asbestos-containing floor tiles, but it also provides better analytical results in building materials that may contain asbestos at low concentrations.
- 2) to clarify EPA's guidance and requirements for the collection and analysis of bulk samples of multi-layered materials, particularly in schools. EPA recommends that multi-layered samples that have been found to be non-asbestos-containing for the EPA "Asbestos in Schools Rule" (AHERA) be resampled before disturbing them, unless lab reports are available documenting that all layers were previously sampled and analyzed. Resampling (if elected) should be done according to the guidelines set forth previously in a January 5, 1994 NESHAP Federal Register Notice, an Aug. 1, 1994 AHERA Federal Register Notice, and in the improved analytical method to avoid potential violation of the asbestos NESHAP regulations.

Note that under the AHERA and NESHAP regulations, LEAs can assume that certain materials are asbestos-containing and manage them as such. This continues to be an acceptable alternative to sampling or resampling.

Both EPA's AHERA program for schools and the EPA asbestos NESHAP program recommend the adoption of the improved bulk sample analysis method published by EPA's Office of Research and Development in July 1993 (EPA/600/R-93/116). EPA developed the improved analytical method to address certain materials:

- that are known to contain asbestos fibers, but in which the asbestos percentage is "low" (< 10%);
- where the presence of asbestos is obscured by a matrix binder of some kind (e.g., vinyl or asphalt floor tiles);
- in which small, thin fibers are present, but are frequently not detected at the magnification and resolution limits of polarizing light microscopes.

The improved method builds on the previous (1982) "Interim" polarizing light microscope (PLM) method. As before, it begins with a careful examination of the sample using a stereo-microscope, then proceeds

(as before) to the examination of sample specimens under a polarizing light microscope. In most cases, these steps will be sufficient to characterize a sample as asbestos-containing (asbestos present > 1 %) or non-asbestos-containing (no asbestos detected, or 1 % or less in the sample).

The improved method includes additional procedures required for the reliable analysis of certain bulk building materials, such as steps for the elimination of the obscuring matrix materials (quantitative analysis of the sample is improved by the use of comparative standard samples having known quantities of asbestos matrix materials), as well as specifying use of transmission electron microscopy (TEM). These additional steps comprise the chief improvements in the new method. The Agency believes that adoption of the improved method should remedy the analytical problems frequently encountered when testing materials such as resilient floor tile (vinyl or asphalt), mastic, and "layered" building materials using the 1982 "Interim" PLM method.

Finally, the results obtained from following recent guidance on "layered samples" and use of the improved sampling procedures for certain problem materials should, where it is possible to do so, facilitate following EPA's "manage in place" guidance for asbestos operations and maintenance (O&M) programs, (EPA "Green Book," July 1990).

II. Issues of Concern

There are two principal issues addressed in this guidance.

Issue 1. The possible misidentification of certain "problem" materials as non-asbestos-containing, with subsequent failure to include them under a surveillance and O&M program. These "problem materials" include asbestos-containing floor tiles, and certain multi-layered building materials.

The 1982 EPA "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" (40 CFR 763, Appendix A to Subpart F) was limited in that it did not provide guidance for analyzing materials that contain thin (i.e., <0.25 micrometer) asbestos fibers. As a consequence, floor tiles analyzed according to the 1982 method and for which negative results were reported may actually contain undetected asbestos in the form of thin fibers below the limits of resolution of the polarized light microscope.

The improved method provides acceptable procedures for reducing matrix materials so that fibers may be made available for microscopic analysis. It also addresses the thin fiber limitation of the 1982 method by providing directions for the use of transmission electron microscopy (TEM) as needed.

The improved method also directs laboratories to analyze the individual layers or strata of a multi-layered sample and to report a single result for each layer. The 1982 "Interim Method," in contrast, provided that the analytical result for a multi-layered sample with discrete layers be reported as one result across all layers. (Although the analyst was directed to identify the presence of discrete layers as seen under stereo-microscopic examination of the bulk sample, and to identify and quantify asbestos fiber content in each layer.) Because the 1982 method allowed the result to be reported as one number, multi-layered samples which may have contained asbestos in a single layer may have been reported by laboratories as non-asbestos-containing.

Thus, under the recommended improved test method, more than one result will be reported for multi-layered samples, and a multi-layered sample which previously was determined to be non-asbestos-containing may actually have layers which will be classified as asbestos-containing based on the presence of asbestos in greater than one percent. The January 5, 1994 NESHAP notice in the Federal Register directs the attention of the regulated community to their requirement to analyze multi-layered samples in this manner for compliance with NESHAP.

The recognition, sampling, and analysis of "layered" building materials may be of particular importance when known or assumed asbestos-containing building materials (ACBM) are left in place. AHERA requires the management of known or assumed ACBM under a school's asbestos operations and maintenance program. EPA issued guidance in July, 1990 ("Managing Asbestos in Place," the "green book") that recommends similar programs in any building or facility where asbestos-containing materials (ACM) are present.

For example, if a planned renovation or remodeling is scheduled, and if the outer surface (i.e., the surface exposed to the room's interior) of a wall or ceiling system is an asbestos-containing layer, that fact should be known prior to some disturbance such as sanding in preparation for painting. Similarly, if an underlying layer of a wall or ceiling system is going to be disturbed (e.g., making a penetration to install light fixtures or heating/cooling ducts), that fact should be known before a service or maintenance worker cuts or drills into the wall or ceiling, and should affect how that work is performed. (See the 1992 guidance manual, "Asbestos Operations & Maintenance Work Practices," published by the National Institute of Building Sciences.)

Issue 2. Possible (unknowing) violations of the asbestos NESHAP by LEAs.

EPA's asbestos NESHAP program has also made "applicability determinations" regarding plaster/stucco or skim coat layers applied over wallboard systems. As stated above, the EPA Asbestos NESHAP position was summarized in a notice of clarification recently published in the Federal Register (January 5, 1994). That notice in the Federal Register directs the attention of the regulated community to the NESHAP requirement to analyze multi-layered samples and report results for discrete layers.

Schools operating under the requirements of AHERA have been, and continue to be, subject to EPA's asbestos NESHAP compliance requirements, when involved in renovation or demolition activities where RACM (regulated ACM) will be disturbed. EPA believes that the August 1994 Federal Register notice clarifies LEA responsibilities under the asbestos NESHAP, and that this guidance regarding the use of the improved sampling and analysis method will further clarify the situation and reduce the potential for possible violations of the asbestos NESHAP.

III. Examples of Materials of Concern

Building materials typically containing thin asbestos fibers (e.g., floor tiles) or asbestos in low concentration (<10%) are the subject of this guidance.

Also, plaster wall or ceiling systems, resilient flooring systems (flooring, mastic, underlayment), and wallboard systems are examples of layered building materials subject to this guidance.

EPA does not regard a sheet of "plasterboard" by itself ("sheetrock," "wallboard," "gypsum board") as a multi-layered material. EPA is not adding a requirement to sample a section of plasterboard as such (see definition in APPENDIX) as a "layered" material under either AHERA or NESHAP regulations.

Lack of knowledge about the possible asbestos content of different strata in layered materials can lead to increased exposure risk under certain circumstances. In this guidance bulletin, EPA is attempting to address the concern for sampling layered materials in a manner so as to reduce risk, as well as the need to comply with recent NESHAP interpretations. The Jan. 5, 1994 Federal Register asbestos NESHAP clarification should be consulted with regard to materials such as joint compound, texturing materials, etc. added to the surface of wallboard, and when those materials would be subject to EPA's NESHAP regulation.

NOTE: Section V of this guidance bulletin offers a suggested strategy for distinguishing between joint compound found at joints in wallboard systems or when the material was applied as a skim coat; i.e., for

determining whether "joint compound" has been applied as a "skim coat" over a wall surface (as referred to in the NESHAP Jan. 5, 1994 FR notice.)

IV. Helpful Sampling Techniques

LEA "designated persons," accredited asbestos Building Inspectors, consultants, and others should follow previous EPA published requirements and guidance with regard to techniques for obtaining bulk samples of building materials in order to analyze them for the presence of asbestos. This information was presented both in guidance documents (such as the 1985 Pink Book and the Purple Book), and in the 1987 AHERA "Asbestos in Schools" Rule Sec. 763.86, 763.87 (see "References.") The techniques are also discussed in approved training courses for accrediting Building Inspectors.

To clarify EPA's guidance, it is important for the sampling device (core borer, knife, etc.) to penetrate all layers of the sample to the substrate. As discussed in Section II, it may be important to know whether discrete layers of a multi-layered sample contain asbestos. Service and maintenance workers may need to perform their work on exposed surface layers that contain asbestos. Or, their task may require them to penetrate non-asbestos layers into or through underlying asbestos-containing layers. Knowledge of where asbestos occurs in a multi-layered sample is important as a means of reducing the potential for asbestos exposure, and in selecting proper work practices to do so. It is also important to know the asbestos content of individual layers, of course, for NESHAP compliance purposes.

Thus, the person who obtains the sample for analysis may need to use professional judgement based on an on-site situation. If a bulk sample remains intact through all layers, and the inspector judges that the sample will remain intact until it reaches the analytical laboratory, the sample may not need to be separated into its respective layers until the laboratory analyst does so. However, if a bulk sample crumbles or breaks down at the time of sample collection, the sample collector may be required to take separate samples from discrete layers at the site, and carefully identify them and their position in the multi-layered system for proper and useful reporting by the laboratory.

EPA guidance regarding the need to keep layers separate as a particular sample is collected, therefore, depends on several factors. They include the professional judgement of the accredited individual who takes the sample, the physical condition and integrity of the material making up discrete layers of a multi-layered sample, the possible importance of reporting asbestos content of an exposed surface layer vs. inner layers of a system (depends on planned activity, such as in O&M tasks), and being in compliance with regulatory requirements.

The 1993 bulk sample guidance bulletin stresses the need for taking sufficient sample volumes of the material to be analyzed. Sufficient sample volumes differ for different material types. Since the quantity of the sample can affect the analytical sensitivity, EPA's recommendations in the July 1993 method should be noted.

V. Suggested Sampling Strategy for Dealing with Joint Compound vs. a Skim Coat/Add-on Application (NESHAP Compliance Issue: Sampling needs to be conducted to determine if materials are joint compound or a skim coat application of the compound over a wall surface.) Be aware that materials applied to ceilings might differ from materials used on walls, and that original construction and later renovations can result in the application of different materials at different times. Joint compound applied to drywall installations prior to 1980 is more likely to contain asbestos than with installations after that date.

A. SAMPLING STRATEGY --

1. JOINT COMPOUND: Sample where joints are expected (take a minimum of 3 samples). For example,

- a. Inside or outside corners
- b. Wallboard joint intervals; i.e., 4 feet from corners on wall stud. Use stud locator or knock on wall to locate stud (listen for "solid" sound). Look at walls above suspended ceiling panels; unpainted joints covered by joint compound are often discernable there.
- c. Note that joint compound is often applied to fill depressions around nailheads; consider the "spottiness" of that type of application.

2. **ADD-ON MATERIALS:** Sample where joints are NOT expected (take a minimum of 3 samples). For example,

- a. Between corners and wallboard joint intervals. Locate by knock on wall, listen for "hollow" sound.

3. **KEEP GOOD RECORDS** of sample locations for later evaluation of results. Note: A laboratory cannot distinguish joint compound at joints from the same material used as a skim coat. Therefore, it is very important that individuals collecting samples clearly describe the sample composition so that the analytical laboratory knows whether to report the results as individual layers or as a "composite" result for non-layered material. (See B-1, B-2 below.)

B. ANALYSIS OF SAMPLES IN LABORATORY, and DATA ANALYSIS BY THE SAMPLER/ASSESSOR

All samples with outer layer having > 1% asbestos on wallboard will be noted. When this situation applies, then the following must be considered:

- 1. If only joint sampling areas show layers with > 1% asbestos, then material is joint compound.
 - a. Combine (weighted) analytical results into composite result for each sample.
 - 1) If result is $\leq 1\%$, no management is necessary.
 - 2) If result is $> 1\%$, the material is RACM (NESHAP) and management is necessary.
- 2. If samples from both joint sampling area and non-joint areas show layers with > 1% asbestos, then the material should be considered "skim coat" or add-on material.
 - a. Do not composite (average) the results; report the results for each layer. Provide a description of each layer in the report, to include their location in relation to each other.
 - b. Material so located should be treated as separate RACM layers according to the asbestos NESHAP, and management is necessary.

VI. References

- 1. Advisory Regarding Availability of an Improved Bulk Sample Analysis Test Method; Supplementary Information on Bulk Sample Collection and Analysis; 59 FR 38970, Federal Register, Aug. 1, 1994.
- 2. Asbestos-Containing Materials in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials (pink book), U.S. EPA 560/5-85-030a, October 1985.

3. Asbestos-Containing Materials in Schools; Final Rule and Notice (AHERA Rule), 40 CFR Part 763, October 1987.
4. Asbestos NESHAP Clarification Regarding Analysis of Multi-layered Systems, 59 FR 542, Federal Register Jan. 5, 1994.
5. Guidance for Controlling Asbestos-Containing Materials in Buildings (purple book), U.S. EPA 560/5-85-024, 1985.
6. Guidance Manual: Asbestos Operations and Maintenance Work Practices, National Institute of Building Sciences (NIBS), Washington, D.C., September 1992.
7. Managing Asbestos in Place: A Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Containing Materials (green book), U.S. EPA 20T-2003, July 1990.
8. National Emission Standards for Hazardous Air Pollutants for Asbestos (Asbestos NESHAP Rule), 40 CFR 61, subpart M, November 1990.
9. Test Method: Method for the Determination of Asbestos in Bulk Building Materials, U.S. EPA 600/R-93/116, July 1993.

APPENDIX: Definitions

Binder: With reference to a bulk sample, a component added for cohesiveness, such as plaster, cement, glue, vinyl, asphalt, etc.

Bulk sample: For the purposes of this guidance, representative portion of building material taken at one distinct location for qualitative and quantitative identification of asbestos. In a multilayered system, one needs a representative portion of each layer.

Discrete: Individually distinct, visually recognizable.

Layer: Stratum; one thickness of some material laid or lying over or under another thickness of the same or different material.

Material: The substances or constituents of which something is composed or can be made. Various materials are used in building construction, such as sand, wood, metal, plaster, cement, asbestos, etc.

Matrix: Material in which asbestos fibers are enclosed or embedded.

NESHAP: "National Emission Standards for Hazardous Air Pollutants;" EPA's asbestos NESHAP regulation, at 40 CFR 61 Subpart M (especially for demolition and renovation activities).

Plaster: A pasty composition comprised largely of water, lime, and sand, that hardens on drying and is used for coating building components such as walls, ceilings, and partitions. Asbestos fibers or other fibrous materials sometimes have been mixed into the plaster to give particular properties.

- * "acoustical" plaster -- plaster specially formulated and applied (sprayed or trowelled on) so as to deaden or absorb sound.

- * "browncoat" plaster -- also called "scratch coat;" a base coating of plaster, usually applied over perforated plaster board, wooden lath or wire mesh.
- * "topcoat" plaster -- a surface finish layer of plaster, usually white and smooth; may contain sand to produce a grainy surface.

Plasterboard: A board used in large sheets as a backing or as a substitute for plaster in walls and consisting of several plies of paper, fiberboard, or felt, usually bonded to a hardened gypsum plaster core. ("gyp[sum] board," "drywall," "wallboard," "sheetrock")

PLM: Polarized light microscopy; a technique for analyzing bulk building material samples for presence of asbestos. The sample is illuminated by polarized light and viewed under an optical microscope.

Sample: To take a sample of or from some material, especially to judge the quality or composition of that material.

Separable: Capable of being separated.

Skim coat: A thin layer or coating of one material (e.g., plaster, stucco, joint compound) applied over another.

Stratum: Layer; one of a series of layers, levels, or gradations in an ordered system; a bed or layer.

Stucco: A fine plaster used in the decoration and ornamentation of interior walls. (Also, a material usually made of Portland cement, sand, and a small amount of lime, applied to form a hard covering for exterior walls.)

Substrate: The underlying support, foundation, or base (wood lath, wire screen, concrete, etc.) to which something else (e.g., plaster) is applied.

System: An integrated group of building components which form an organized functional unit, such as a wall system, or ceiling system, or floor system.

TEM: Transmission Electron Microscopy and related techniques; will enable specific identification of thin asbestos fibers.